Service Manual

MINOLTA XD (2005-500··600)
MINOLTA XD 7 (2005-300··400)
MINOLTA XD11 (2005-100··200)

Minolta

MINOLTA XD 2005-500(600)
MINOLTA XD 7 2005-300(400)
MINOLTA XD 11 2005-100(200)

( ) Black body

TYPE

Electronic auto exposure control type 35 mm single-lens reflex forcal plane shutter camera. Aperture priority system and shutter speed priority system available.

STANDARD LENS

MD ROKKOR 50 mm F 1.4 (2521)
MD ROKKOR 50 mm F 1.7 (2520)
MD ROKKOR 50 mm F 2 (524)…for export

SHUTTER

Electronic control metal forcal plane shutter.

Exposure time : Auto…1~1/1000 (stepless)
Manual…O (1/100), B, X (1/100), 1, 1/2, 1/4, 1/8, 1/15, 1/30, 1/60, 1/125, 1/250, 1/500 and 1/1000, O, B…Mechanical control usable without batterys.

Dial : Click stop rotary dial

Synchro contact : X contact, hot shoe (electric shock proof) and JIS B type socket.

Synchro auto control contact
: Shutter speed automatically set to 1/100 with the exclusive strobo mounted and charge completed.

Self-timer : Shutter button start type.
Time…10 sec. Usable with-out batterys.

FILM ADVANCE

Winding method : Single-stroke winding by a lever (winding with several small strokes are impracticable).

Winding angle : 130° (preparatory 30°)

Spool : 4 claws, film reverse winding.

Counter : Auto resetting type. (no operation in multiple photo graphy).

Film rewinding : R button stopping type. (auto restoring).
Folding crank rewinding knob.

Maltiple exposure: R button push type.

Auto winder : Auto winder D (one-touch mounting)

VIEW FINDER

Type : Eye level finder using pentagn prism.

Forcusing plate : Sprit image at center and micro prism Accute-matt type.

Visual field percentage
: 94% (for standard frame, 24×36 mm)

Image magnification
: 0.87 (with a f=50 mm, standard lens on infinity)

Unit of measurement
: −1.0 diopter.

Indication in view finder
: LED indication (shutter speed or F number), setting F number and setting shutter speed.

Mirror : Quick return mirror (PO value 143)
With shock absorber by air damper.

EXPOSURE CONTROL

Light measuring system
: TTL center-zone weighted "(overall)" metering system.

Auto exposure range
: EV 1~EV 18 (ASA 100, F 1.4)

Film sensitivity : ASA 12…25…50…100…200…400…800…1600…3200
ASA-DIN conversion on back cover.

Exposure correcting device
: Corretion up to standard value ±2 EV.

Indication interlocking
: Lens side MC lug acts on MC ring.
Lens side MD lug acts on MD coupler.

Batterys : 2 silver oxide batterys.
1.5V (JIS-G13)
S-76 (SONY-EVEREADY, EVEREADY)
G-13 (NATIONAL, HITACHI, TOSHIBA)
MS-76 (MALLORY)
RS-76 (RAY-O-VAC)

Main switch : ON with shutter button pushed.

Battery checker : When power source voltage is too low, pushing shutter button causes no release (below 2V at normal temperature), LED in finder darkens (below 2.3V at normal temperature).

OTHERS

- Eye-piece shutter built-in.
- With safe load signal (S.L.S.)
- With memo holder.
- Push type pre-view button.

Accessories : Auto winder D (8731-100)
Auto electroflash 200X (8668)
Remote cord "S" and "L" (8035-100, 200)

Dimentions : 136 (L) × 86 (H) × 51 (W)

Weight : 560g (body only)

Description of Mechanism

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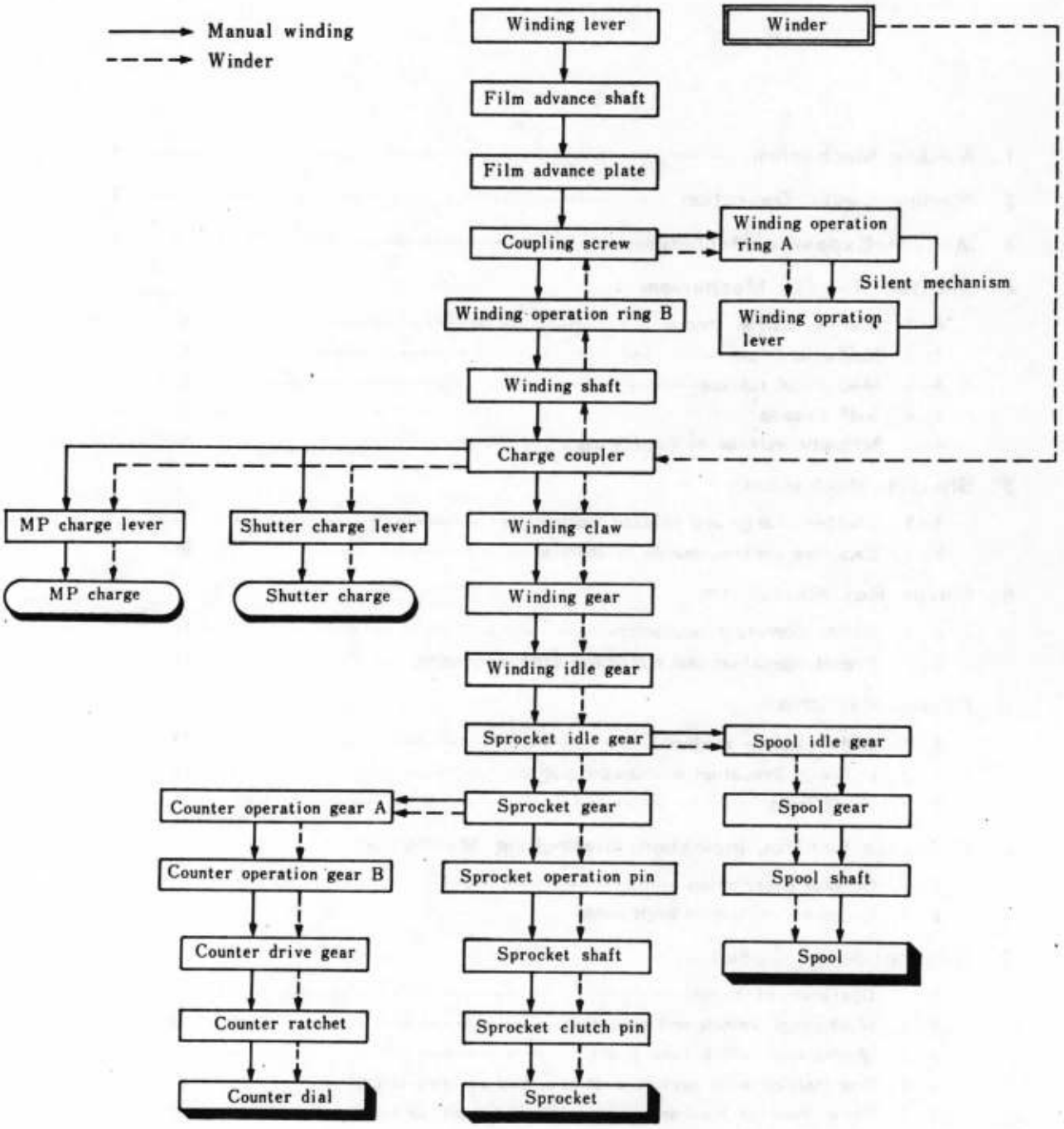
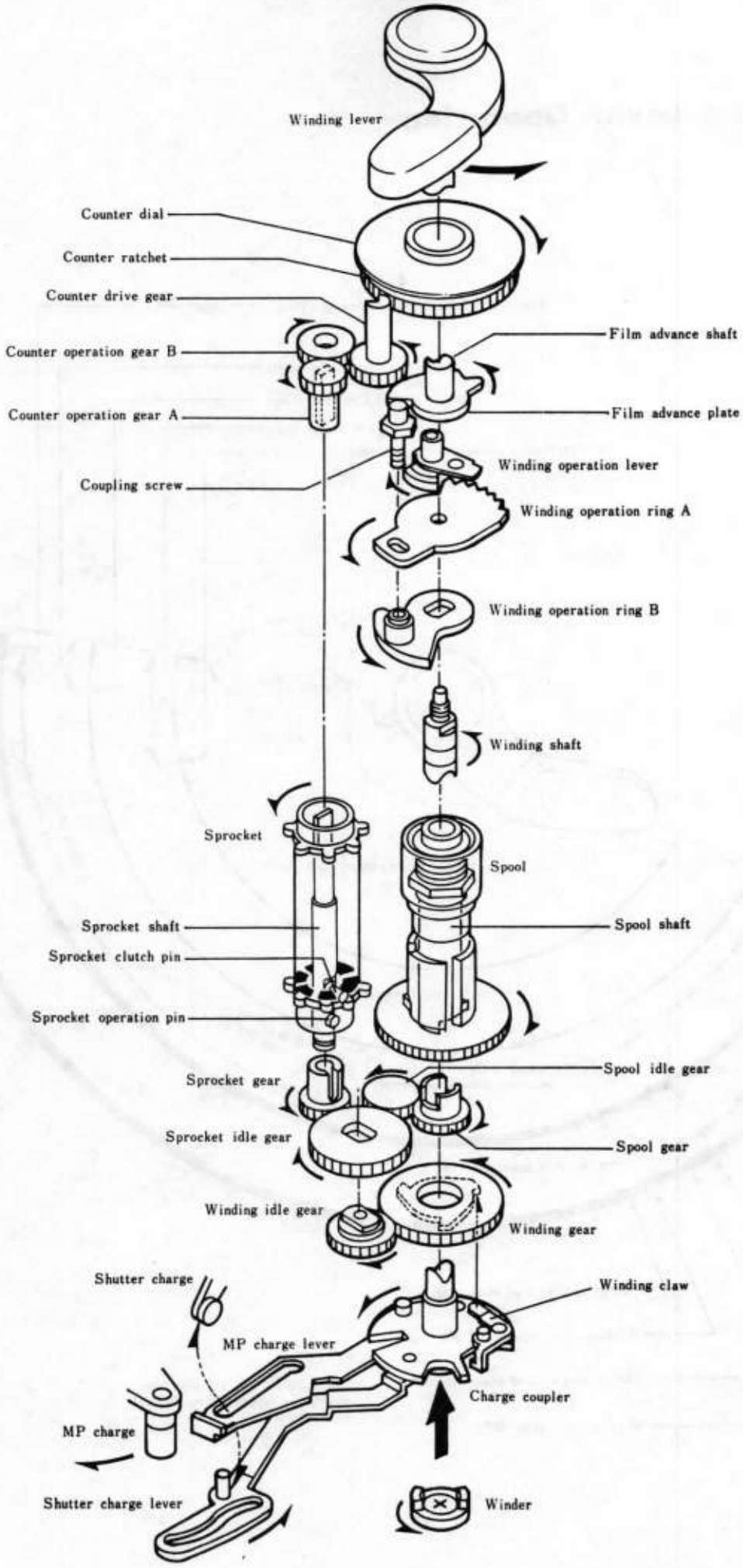
1. Winding Mechanism

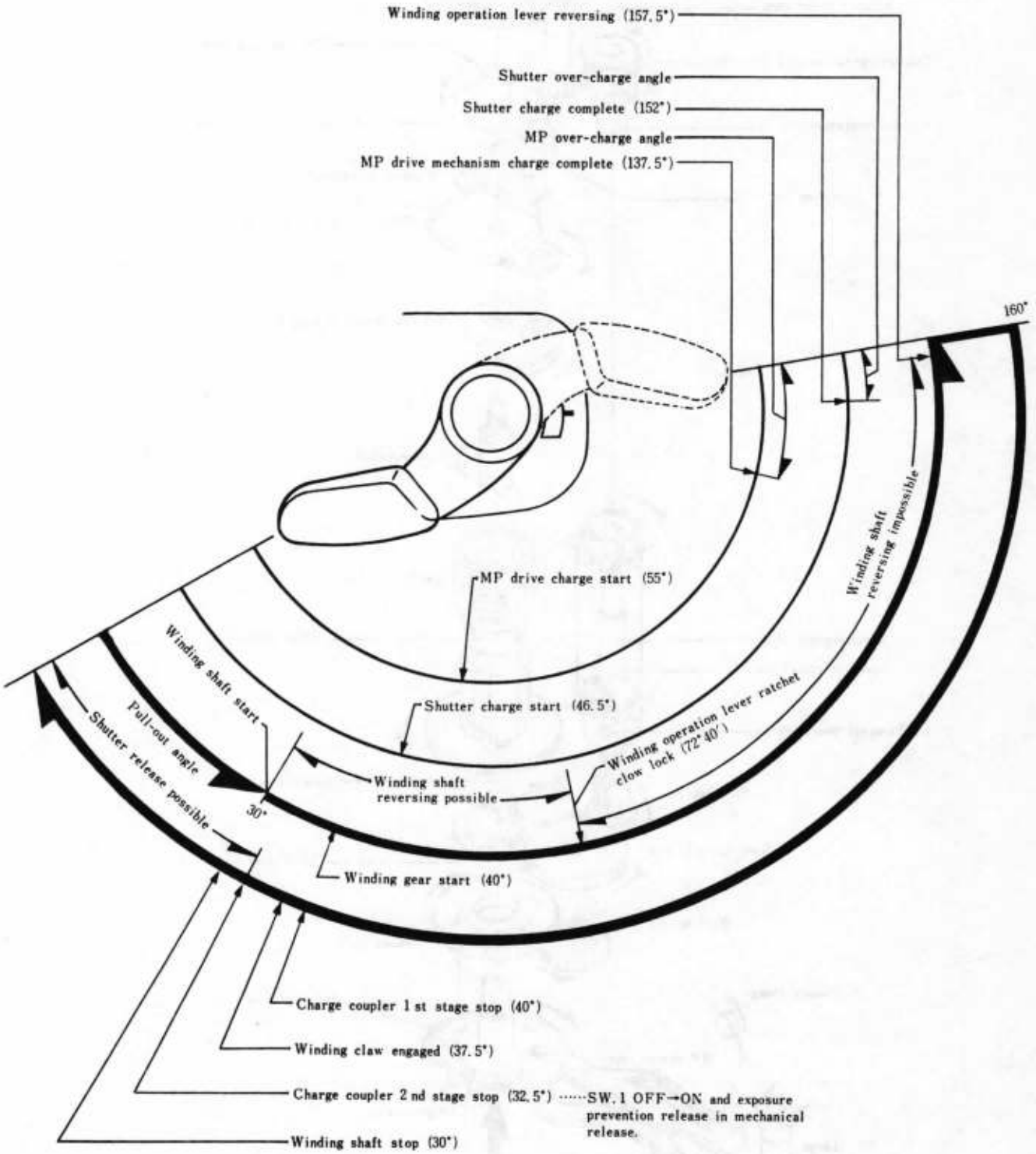
■ Operating order (Arrows show interlocking marks)



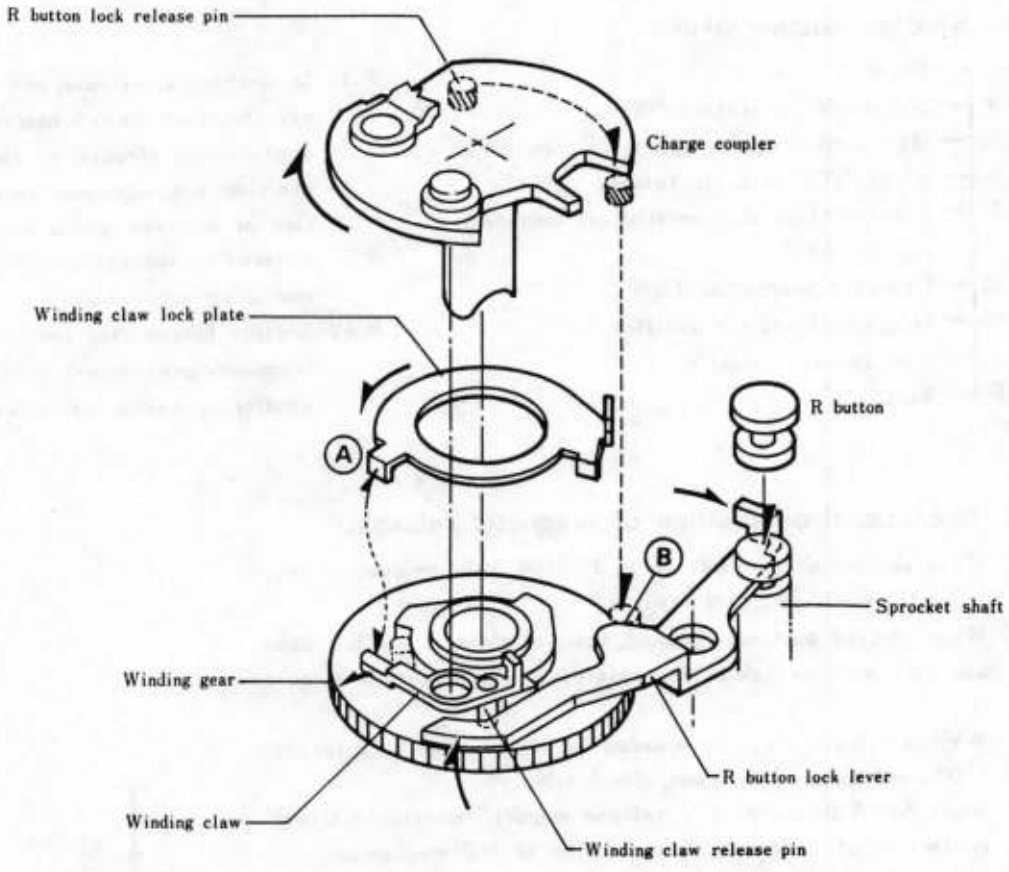
- Winding shaft is separated from film advance shaft so that winding lever is not rotated when auto winder is used.
- Exposure prevention switch (S_1 interlocked with winding stop lever) is provided because of magnetic release.
- Film advance stop spring on the winding stop lever is provided with switch contact (S_{14}) in order to transmit the winding signal to auto winding.
- Frictional silent mechanism is provided in order to minimize ratchet clicking created by winding operation lever.
- Rubber stopper is employed in order to minimize stopper noise created by winding mechanism (when auto winder is used in particular).


Winding lever
Counter dial
Counter ratchet
Counter drive gear
Counter operation gear B
Counter operation gear A
Coupling screw
Film advance shaft
Film advance plate
Winding operation lever
Winding operation ring A
Winding operation ring B
Winding shaft
Sprocket
Spool
Sprocket shaft
Sprocket clutch pin
Sprocket operation pin
Spool shaft
Spool idle gear
Sprocket gear
Sprocket idle gear
Spool gear
Winding idle gear
Winding gear
Shutter charge
Winding claw
MP charge lever
Charge coupler
MP charge
Shutter charge lever
Winder

2. Winding Lever Operation


Winding operation lever reversing (157.5°)
Shutter over-charge angle
Shutter charge complete (152°)
MP over-charge angle
MP drive mechanism charge complete (137.5°)
160°
MP drive charge start (55°)
Winding shaft reversing impossible
Winding shaft start
Pull-out angle
Shutter release possible
30°
Shutter charge start (46.5°)
Winding operation lever ratchet claw lock (72°40')
Winding shaft reversing possible
Winding gear start (40°)
Charge coupler 1 st stage stop (40°)
Winding claw engaged (37.5°)
Charge coupler 2 nd stage stop (32.5°) ·····SW.1 OFF→ON and exposure prevention release in mechanical release.
Winding shaft stop (30°)

3. Multiple Exposure



〔Operation〕

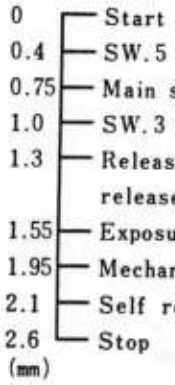
1. When R button is pushed, sprocket shaft is pushed up causing sprocket clutch pin to be disengaged from sprocket groove. When sprocket shaft is pressed down, R button lock lever is fitted in sprocket shaft groove. At the same time, winding claw release pin is pushed by R button lock lever, then winding claw is disengaged from winding gear claw.
2. When winding lever is operated in that condition, winding gear doesn't rotate because winding claw is disengaged from winding gear claw. Therefore, neither spool nor film counter do not operate.
3. When R button is pushed and winding lever is operated, film is not fed but charge coupler is rotated. So, shutter and MP drive mechanism are charged making multiple exposure possible.
   Also, winding claw lock plate is operated in the direction of the arrow by winding claw spring just after start of winding shaft. Thus, winding claw operation is controlled by bend Ⓐ to eliminate deflection of multiple exposure.

〔Release〕

1. At the final stage of winding operation, R button lock release pin of charge coupler pushes Ⓑ of R button lock lever to return the lever to the original position, and then sprocket shaft is also returned. Therefore, film is fed by the next winding operation unless R button is pushed again.

4. Shutter Release Mechanism

4-1. Shutter button stroke



※1. In mechanical release and self release, main switch holder operation is stopped at this position, not allowing the operation of magnetic release.

※2. Related to successive photography using auto winder.

※3. Shutter button stop position (exposure prevention) during winding in mechanical release.

4-2. Operational description of magnetic release.

1) When shutter dial is set to X, 1~1000, release control lever is in the position as illustrated.

2) When shutter button is pushed, release plate is shifted down and then main switch holder rotates in the direction of arrow ①.

- When release plate is lowered by 0.4 mm, SW.5 is turned ON, and lowered by 1 mm, SW.3 ON.

3) When SW.3 is turned ON, release magnet (mentioned later) contact is off allowing the operation of MP mechanism.

4) When shutter button is further depressed, lowering the release plate by 1.3 mm, release plate is stopped by the bend of release control lever.

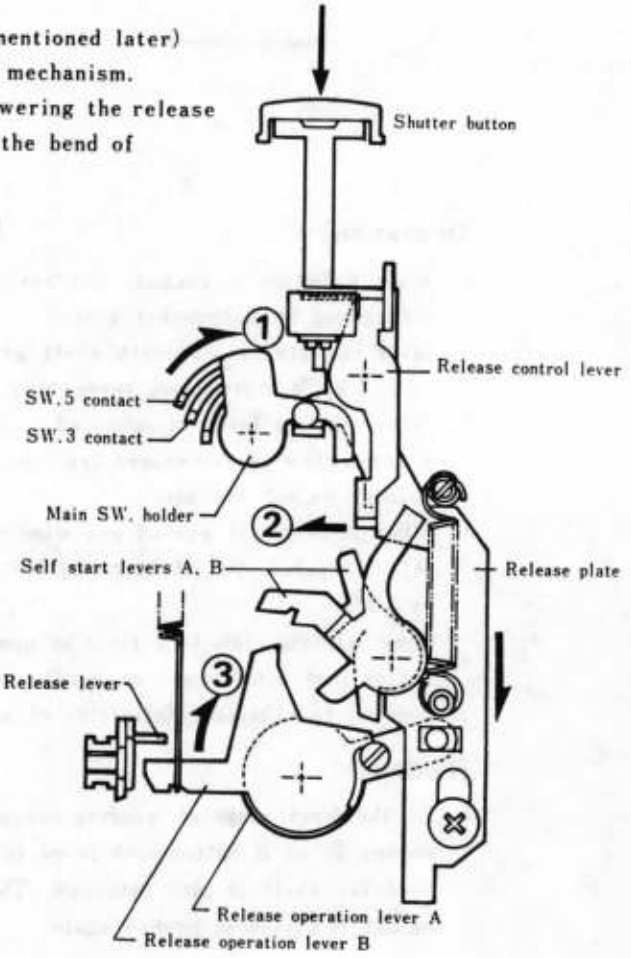
4-3. Operational description of mechanical release.

1) When shutter dial is set to B, O, release control lever rotates in the direction of arrow ②, and then release plate lowering becomes possible over the entire stroke (2.6 mm).

2) When release plate is lowered by pushing shutter button, SW.5 is turned ON same as in 4-2, but main SW. holder is stopped by release control lever when release plate is lowered by 0.75 mm.

- Therefore, SW.3 is not turned ON.

3) When shutter button is further depressed, lowering the release plate by 1.95 mm, release operation lever B is rotated in the direction of arrow ③ via release operation lever A being interlocked with release plate, thus pushing up release lever to start the operation of MP mechanism.



■Self start lever is held by self drive gear as illustrated.

4-5. Operational description of self release.

1) Charging operation (➡①) of self-timer causes self start lever B, stopped by drive gear pin, to rotate to the ➡②.

2) When self start lever B is rotated, release control lever rototes to the ➡③ irrespective of shutter dial position.
Accordingly, lowering of release plate becomes possible over the entire stroke (2.6mm).

3) Anchor retainer, stopped by self start lever B, rotates to the ➡④ to retain the anchor thus preventing its operation during self gear charging.
- Anchor retaining is completed when self-timer is turned up to 16°30′.

4) SW. 5 is turned ON when release plate is lowered 0.4mm by pushing shutter button.
When it is lowered 2.1mm, self start lever A, being in contact with the side of release plate, rotates to the ⇨⑤ and goes to stop the release plate, and also presses the anchor retainer to start self gear.
- SW. 3 is not turned ON because of release control lever.
- Release plate operates exceeding mechanical release position (1.95mm) but no mechanical release occurs because release operation lever B is stopped by self start lever B.

5) When self gear is started, drive gear returns to the ⇨⑥ and self start lever B is rotated to the ⇨⑦ by drive gear pin. Then release control lever is set free to the ⇨⑧ causing main SW. holder to be released, and then SW. 3 is turned ON.
- When shutter dial position is at X, 1~1000, magnetic release will work.

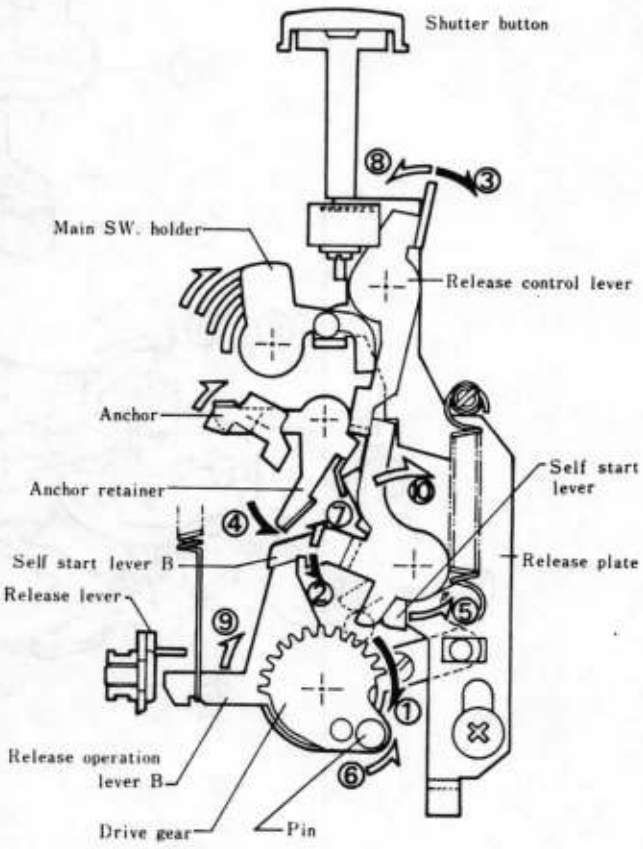
6) As self start lever B is further rotated, release operation lever B is released and rotates to the ⇨⑨ to push up release lever.
- When shutter dial positon is at B, O, mechanical release will work.

7) Self start lever B rotates even after completion of mechnical release, and self start lever A rotates to the ⇨⑩ to set release plate free, and then release plate and shutter button are returned to the original positions.

■Self gear is charged in the illustration.

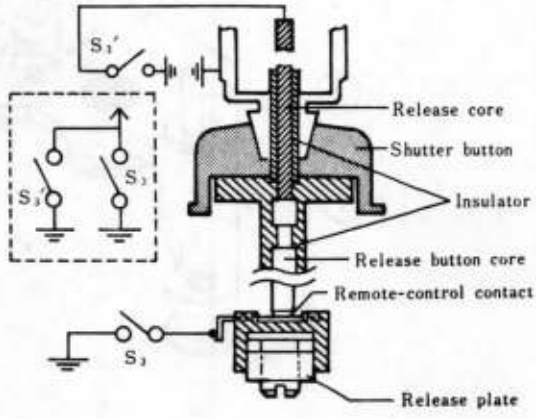
➡ : Interlocking by charging operation of self-timer.

⇨ : Interlocking after self-timer start.



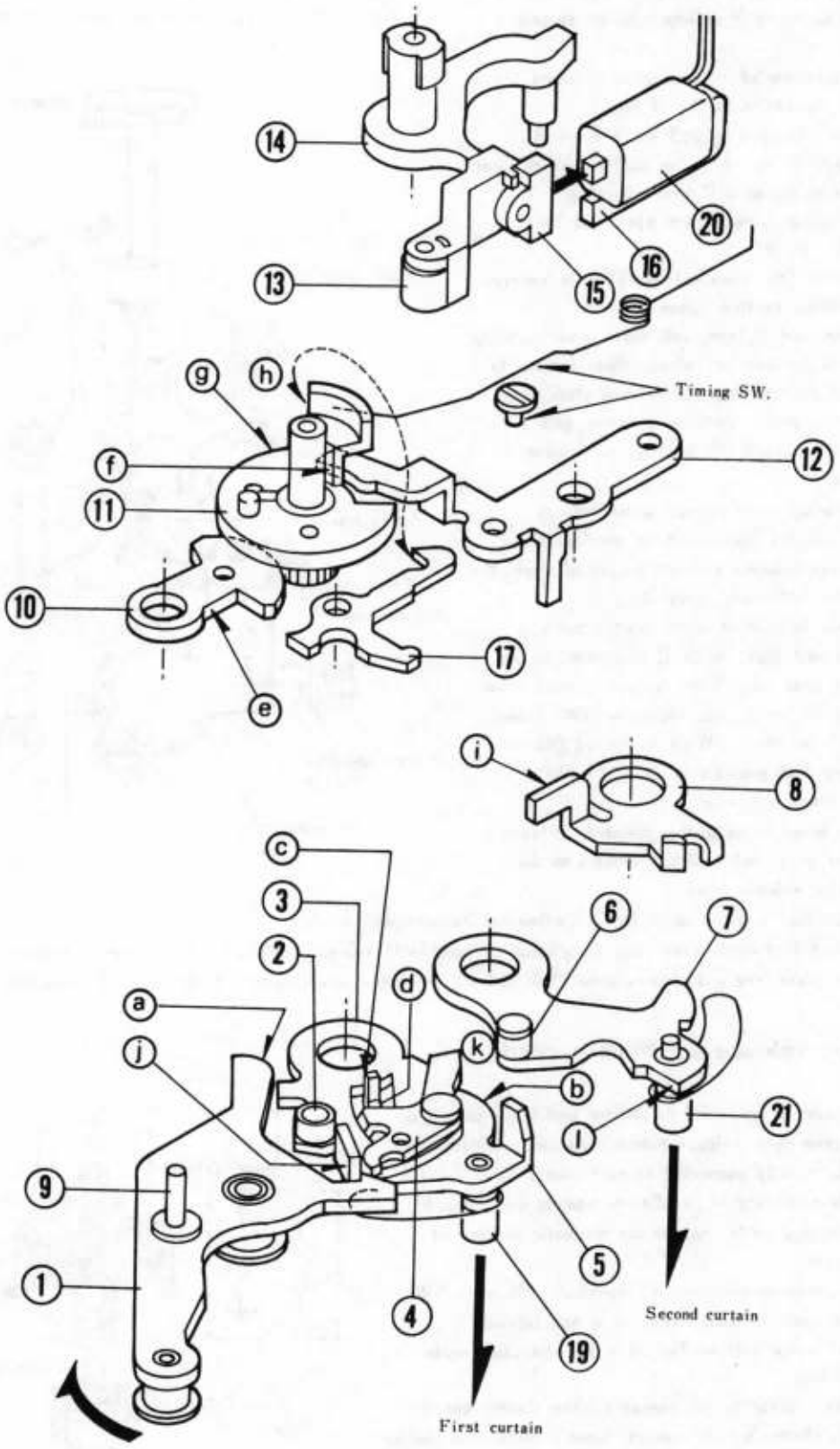
4-5. Magnetic release by remote cord

When remote cord is connected to shutter button mechanism as illustrated, release core, release button core and remote-control contact are electrically connected to each other. Also, release switch (S_3) is connected in parallel to remote cord switch (S_3'). Then turning on S_3' causes the magnetic release of camera to operate.
- At that time, release plate doesn't operate. So, main SW. holder is not operated and indication is not lighted. However, indication will be lighted if the operation mode is before-winding.
- Because release plate is not operated, when shutter speed dial is at B, shutter's bulb control doesn't work, and shutter operates at 1/100 sec.



5. Shutter Mechanism

5 - 1. Shutter charge and release mechanism



[Drive mechanism charge]

1) Shutter is charged when set-lever ① is pushed in the direction of the arrow by shutter charge pin on the body side.
2) Then upper cam part ⓐ of set-lever in the sector drive mechanism pushes up opening lever ③ via opening lever roller ② so that bend ⓒ of operation lever ④ on opening lever is engaged with stop ⓓ of open/close lever ⑤.
3) On the other hand, upper cam part ⓑ of opening lever pushes up closing lever ⑦ via closing lever roller ⑥ until it is engaged with closing lever claw ⑧, thus completing the charge of drive mechanism.

[Exposure control mechanism charge]

1) When set-lever ① is cocked, set-lever pin ⑨ pushes and part ⓔ of timing cam set gear ⑩ thus rotating timing cam ⑪ clockwise to charge the mechanism.
2) Timing cam first moves off part ⓕ of opening lever claw ⑫ and stops open/close lever ⑤.
3) Next, sticking piece ⑮ of sticking lever ⑭ is pressed against magnet core ⑯ by cam part ⓖ via sticking lever roller ⑬. After that, timing cam stop ⓗ is stopped by release lever ⑰ thus completing the exposure control mechanism charge.

[Shutter release]

1) When shutter button is depressed, camera is released, and switch is operated just before operation of preset lever. Then power is supplied to the magnet for shutter speed control.
2) Shutter release lever on the camera side pushes down release lever ⑰ just before completion of mirror raising, thus releasing the timing cam to start the shutter.
3) Timing cam ⑪ rotates counterclockwise to operate timing switch and to start the speed control circuit on the camera side.
4) Next, timing cam rotates opening lever claw ⑫ clockwise to release open/close lever ⑤, and then first curtain is driven (opened) by first curtain drive roller ⑲.
5) When magnet is demagnetized by speed control circuit after lapse of the specified time, sticking lever ⑭ rotates clockwise and the pin of sticking lever acts on bend ⓘ of closing lever claw ⑧ to release closing lever ⑦.
6) Then second curtain is driven (closed) by second curtain drive roller ㉑, completing the specified exposure. When the first curtain operation has been completed, bend ⓙ of opening lever is stopped by set-lever, preventing the first curtain from bouncing.
7) Just before completion of operation of closing lever ⑦, closing lever roller ⑥ on closing lever hits end part ⓚ of operation lever ④ to release open/close lever ⑤ thus re-starting the first curtain to cover the opening.
8) On the other hand, return signal lever on mirror box side is pressed down by closing lever tip ⓛ to lower the mirror.

5-2. Exposure control change mechanism

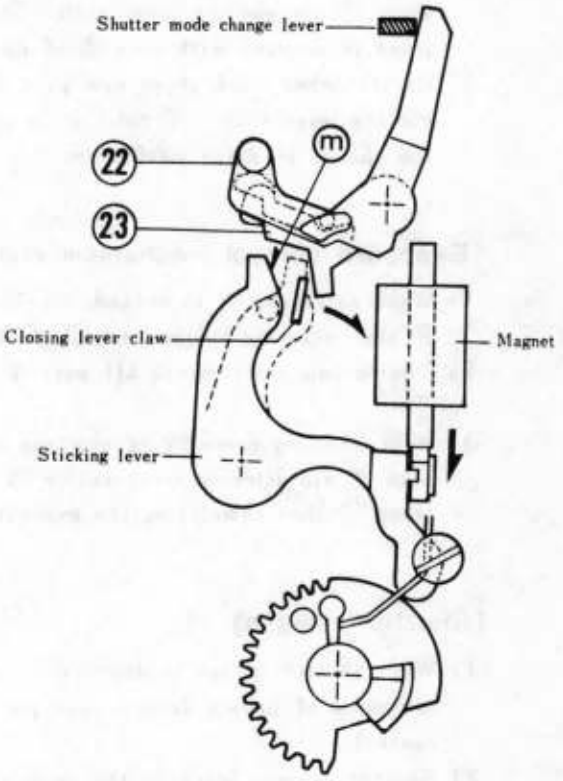
1) Electric control

① When shutter speed dial is set at 1~1/1000, shutter mode change lever on body side, being interlocked with speed dial mechanism, is held in AUTO position of change lever ㉒ on shutter side.

② At that time, second curtain is controlled by magnetic signal because change lever and manual lever ㉓ are away from the operating range of end part ⓜ of sticking lever.

When change lever is set at AUTO without battery, pushing shutter button by using the power source warning circuit on camera side will not release the shutter, but shutter itself is operated at 1/1000~1/1500.

■Charged condition



2) Mechanical control

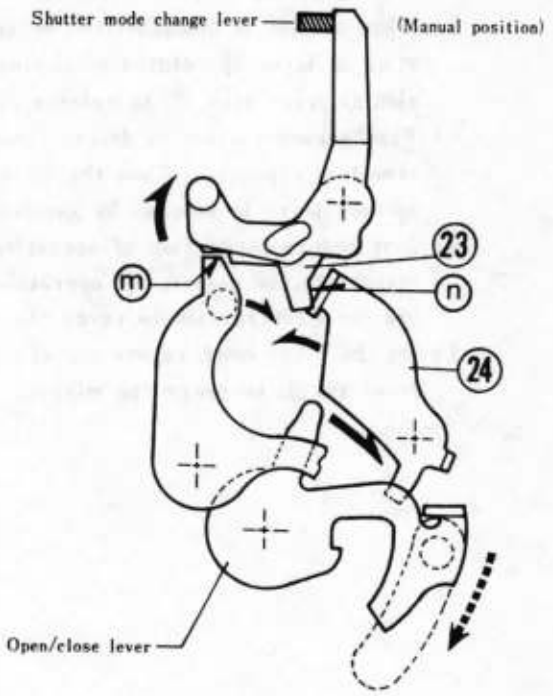
① When shutter speed dial is set at O, X, change lever on shutter side is held at manual position by shutter mode change lever on body side.

② At that time, manual lever ㉓ comes within the operating range of sticking lever end part ⓜ, and then sticking lever is stopped by manual lever even when sticking lever moves off the magnet.

③ After operation of first curtain, X-lever ㉔ is turned counterclockwise by open/close lever. The bend of the lever hits manual lever tip ⓝ to rotate manual lever clockwise thus releasing the sticking lever and allowing the second curtain to run.

At mechanical control with battery installed, the speed control circuit on camera side gives information of 1/250~1/1000 sec. to the magnet on shutter side.

■Charged condition



3) Bulb control

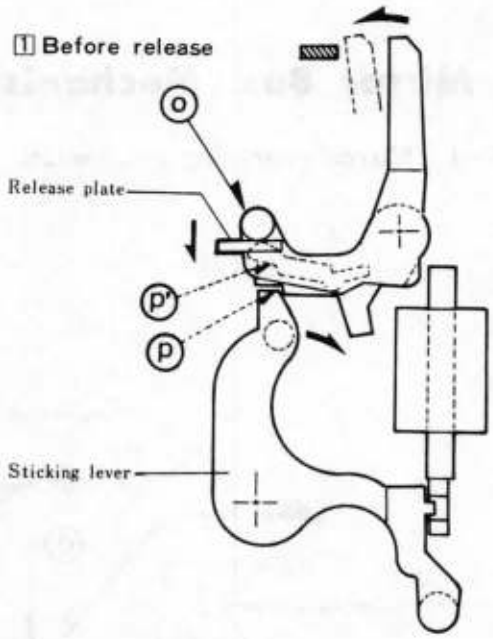
① When shutter speed dial is set at B, shutter mode change lever is shifted so that manual lever and change lever ⓟⓟ′ are able to come within the operating range of sticking lever.

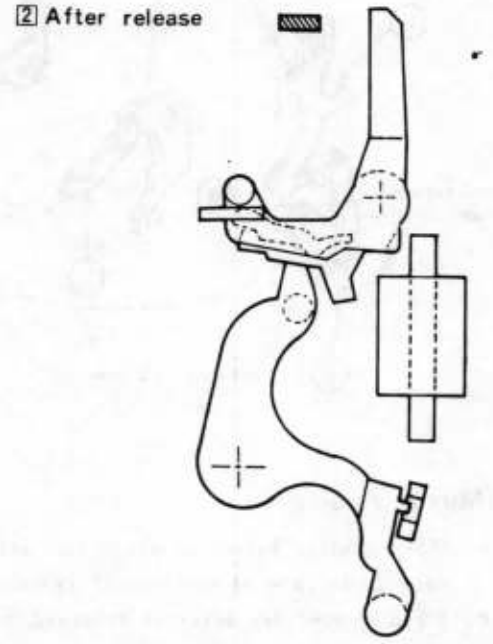
② Before the camera is released, pin part ⓞ at the end of change lever is held by release plate on camera side. Therefore, only manual lever stop ⓟ is within the range of operation.

③ When release plate is pressed down, change lever follows it and rotates counterclockwise. Then lever stop part ⓟ′ enters the operating range of sticking lever, allowing the first curtain to run by shutter release, and X-lever hits the manual lever to come out of the operating range of sticking lever.

④ Even when manual lever is out of the operating range of sticking lever, sticking lever is held by change lever stop ⓟ′ and shutter is kept released.

⑤ When shutter button is released, release plate is pushed up to rotate change lever clockwise thus releasing sticking lever to operate the second curtain.

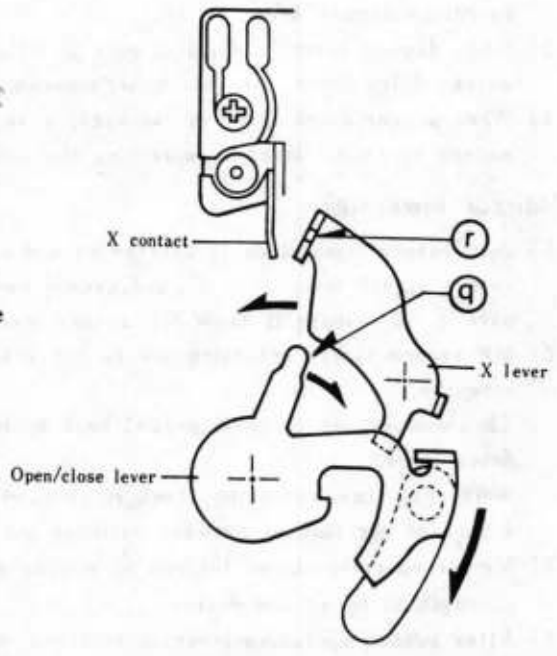




4) X-contact interlocking mechanism

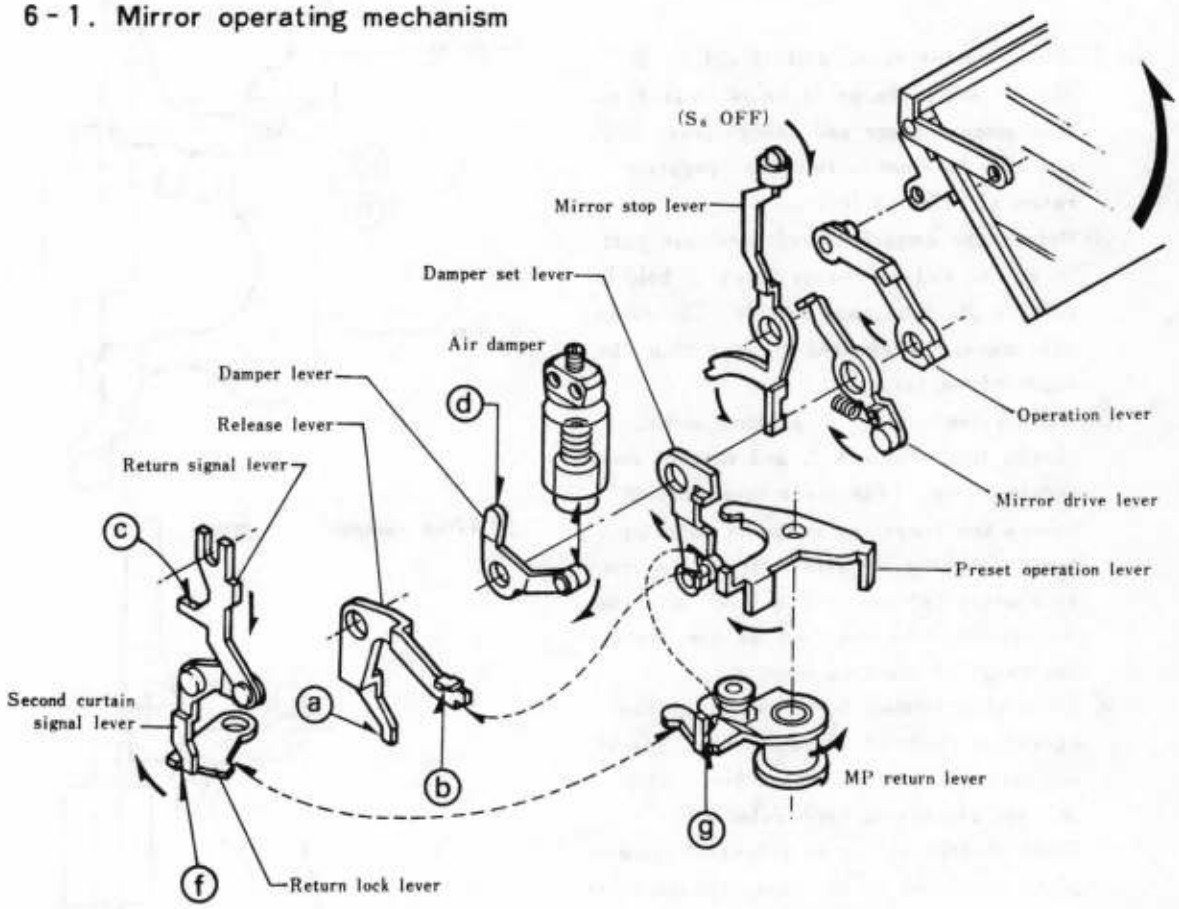
① After operation of first curtain with shutter released, open/close lever end ⓖ hits X-lever to turn it clockwise. Then the bend ⓡ of the lever comes in touch with X contact ㉕.

② After that, opening lever is returned counterclockwise. At that time, X-lever is rotated clockwise by spring to become released from X contact.



6. Mirror Box Mechanism

6 - 1. Mirror operating mechanism



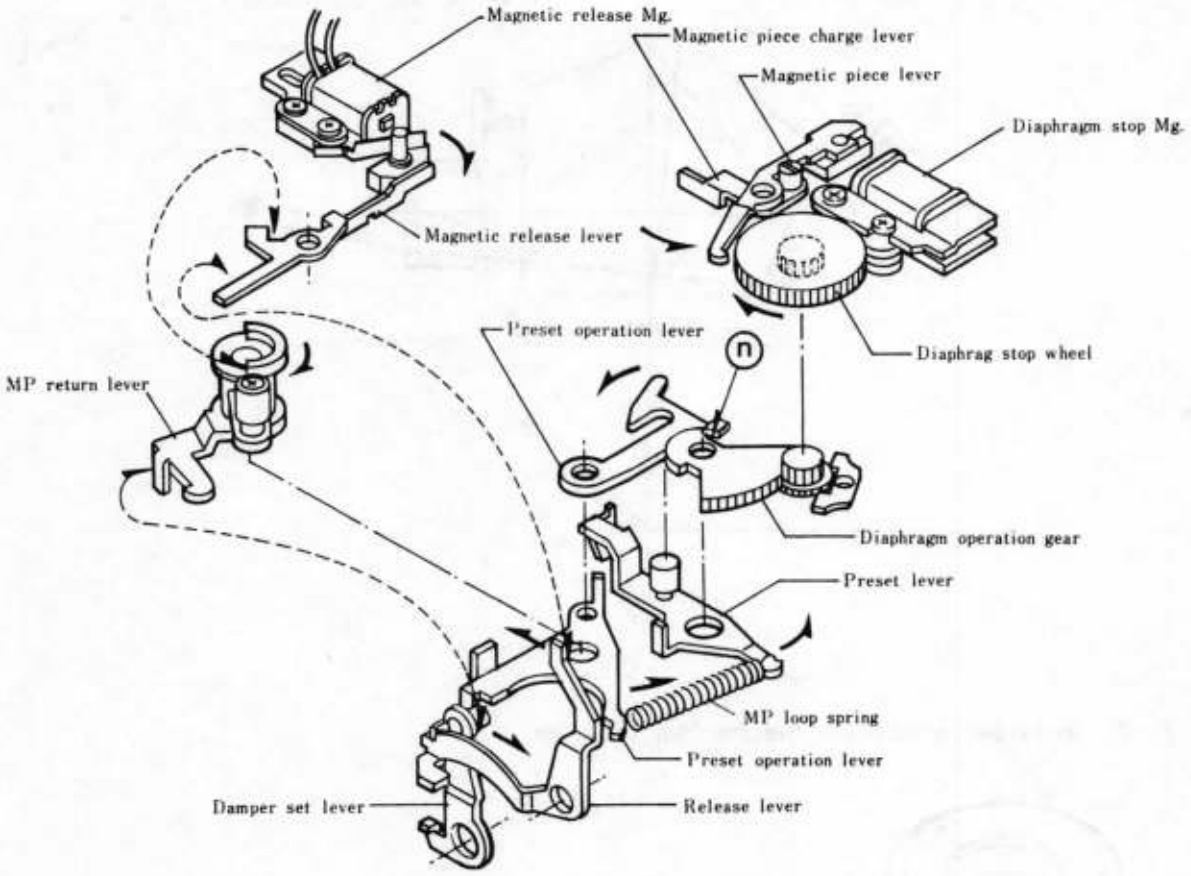
[Mirror raising]

1) When shutter button is depressed, release lever part ⓐ in case of magnetic release or part ⓑ in case of mechanical release is pushed to release damper set lever.
2) When damper set lever is released, preset operation lever, stopped by damper lever pin, starts operating and at the same time air damper piston is pushed down by damper spring to rotate damper lever.
3) When damper lever is rotated, part ⓓ of the lever pushes mirror stop lever to release mirror drive lever. At that time, memory switch (S_6) is turned OFF.
4) When mirror drive lever is released, it is operated by mirror operation spring to push mirror operation lever thus raising the mirror.

[Mirror lowering]

1) Just before completion of shutter second curtain operation, closing lever pushes down return signal lever part ⓒ, and second curtain signal lever pushes return lock lever part ⓕ to release it from MP return lever.
2) MP return starts returning due to MP return spring and return lever support spring strength.
   Then damper set lever is pushed back by bend part ⓡ of the lever to push back mirror drive lever.
   - At that time, returning shock is reduced by air damper spring and the viscous resistance of air flowing between cylinder and piston.
3) Mirror operation lever follows up mirror drive lever with the aid of mirror down spring strength to lower the mirror.
4) After preset operation lever is returned, damper set lever is stopped by release lever.

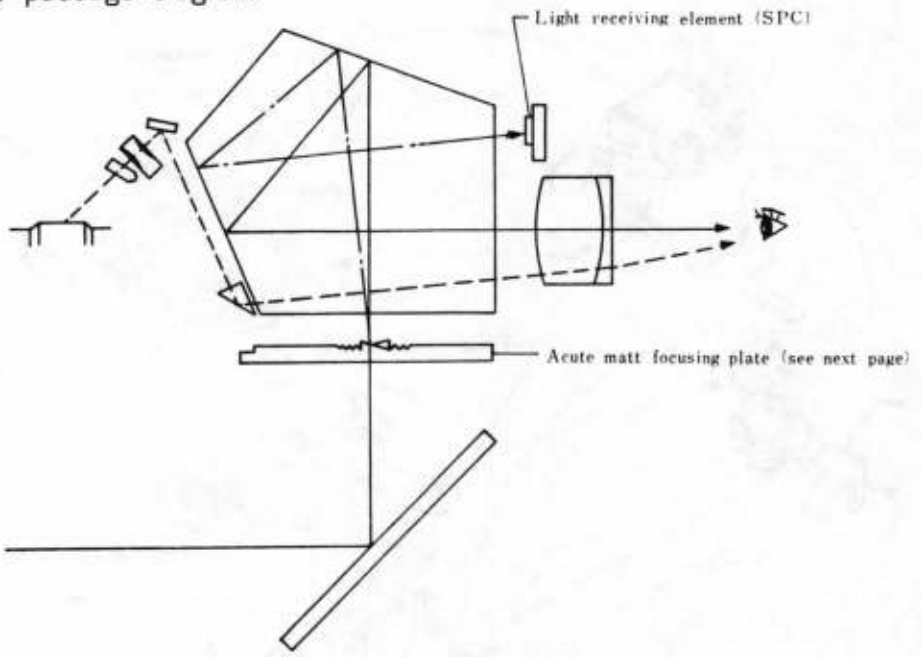
6-2. Preset drive and diaphragm stop mechanism



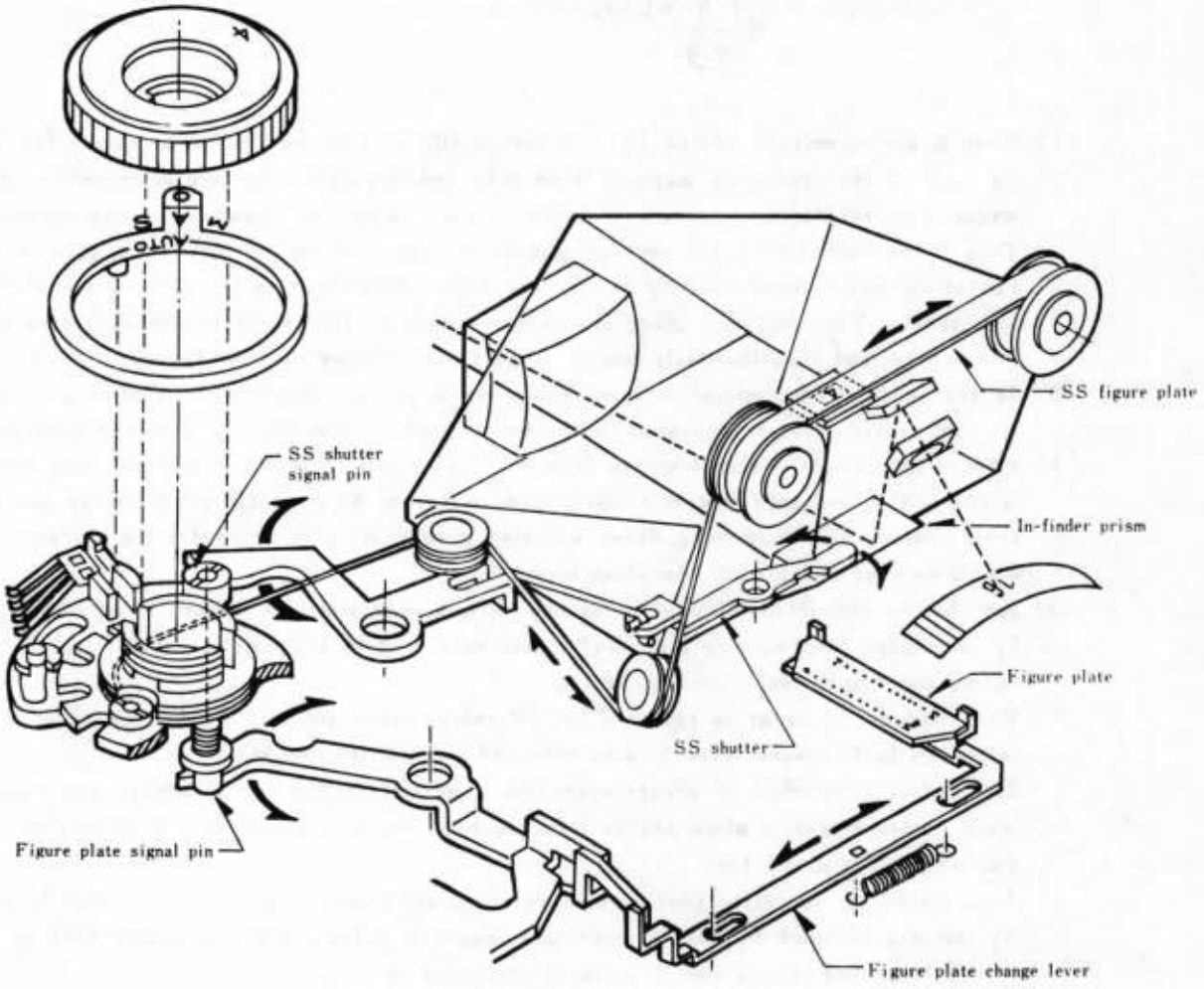
1) When magnetic release switch (S_3) is turned ON, coil is electrified to cancel the magnetic field of the permanent magnet. Then yoke and magnetic piece are demagnetized and magnetic release lever hits release lever by the function of magnetic release spring. Then S_7 is turned OFF and control circuit is activated and the indication goes out.
2) Preset operation lever, held by damper set lever, starts moving by the function of MP loop spring. Then magnetic piece charge lever, held by the tip of preset operation lever, is set free, and simultaneously preset lever starts moving to stop down.
3) At that time, preset operation lever moves while pushing diaphragm operation gear part ⓝ. So, preset lever is operated by the function of escape wheel and anchor governor.
4) When diaphragm stop signal comes from control circuit, coil for diaphragm stop magnet is electrified and then magnetic piece lever is turned by magnetic piece charge spring, thus stopping diaphragm stop wheel, and then preset lever is stopped via diaphragm operation gear and preset operation lever.
5) Just before completion of shutter second curtain operation, MP return lever is released by the signal from closing lever and starts returning by the function of MP return spring and return lever support spring.
6) When damper set lever is returned by MP return lever and also preset operation lever is pushed back, preset lever is also returned via MP loop spring.
7) Just before completion of preset operation lever motion, the end of preset operation lever pushes magnetic piece charge lever to turn magnetic piece lever thus setting diaphragm stop wheel free.
   Then diaphragm operation gear is also returned and magnetic piece is attracted by yoke. At the magnet block for magnetic release, magnetic release lever is pushed back by MP return lever and then magnetic piece is attracted by yoke.

7. Firder

7-1. Light passage diagram

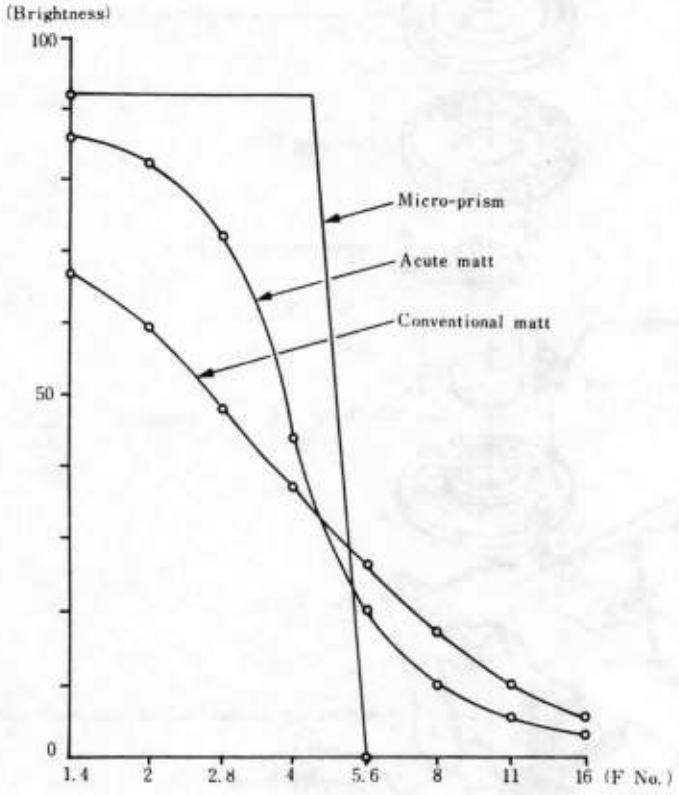


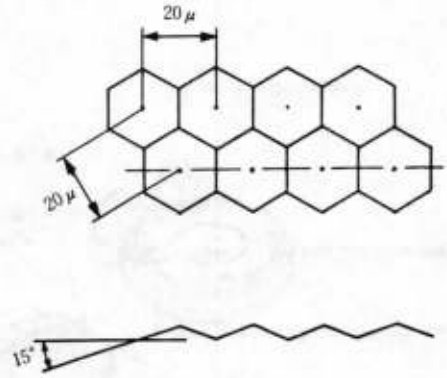
7-2. In-finder indication mechanism diagram



7-3. Acute matt

■ Brightness of acute matt





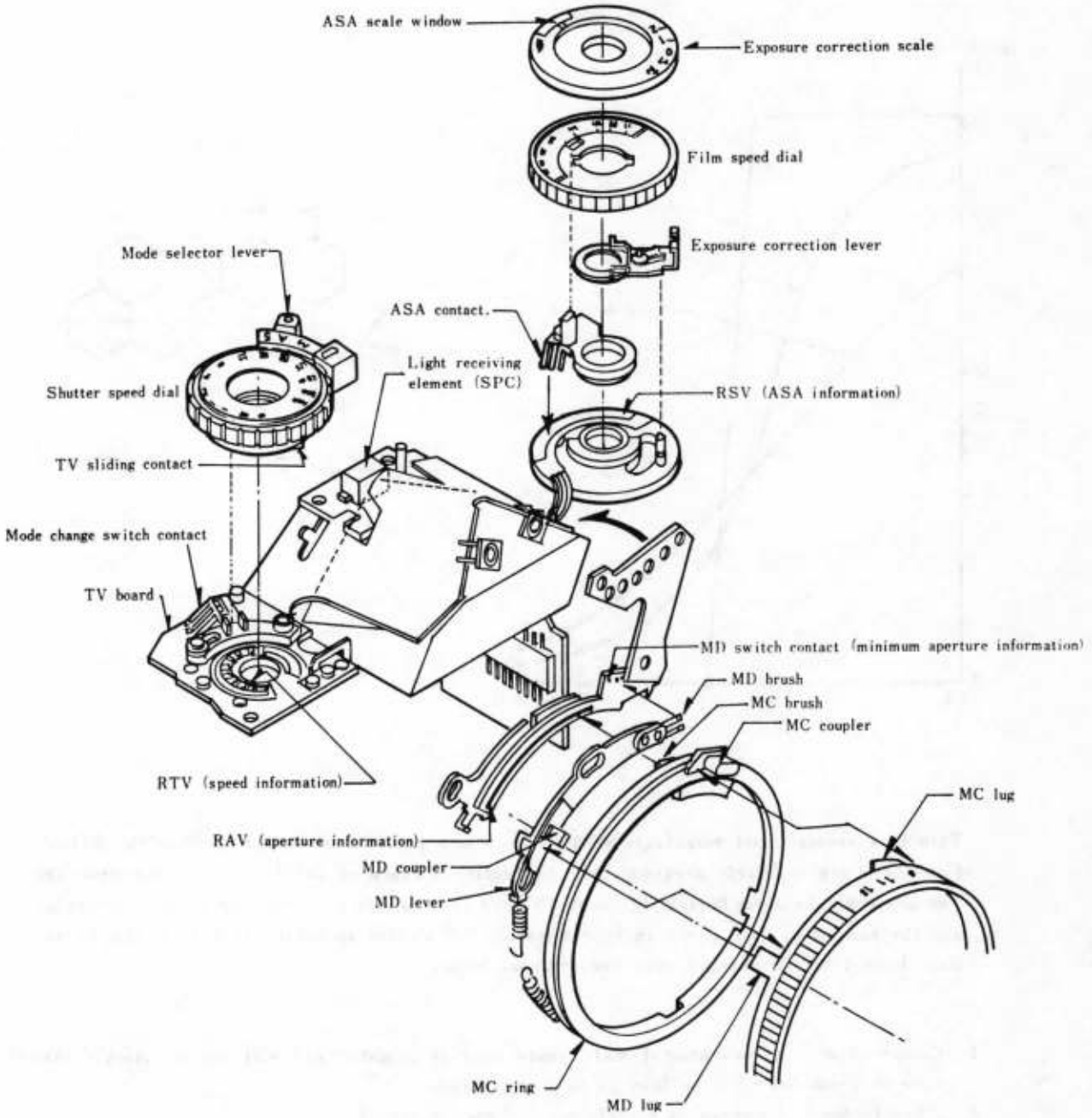
This is a special matt manufactured through a new process developed by Minolta. Extra-fine cones are regularly arranged over the entire surface of focal plate at 20μ intervals. The angle at the cone bottom is about 15° and the surface of each fine cone is irregular, and the number of fine cones is approximately 2.5 million in total. Therefore, the acute matt have 4 big advantages over conventional matts.

1) Compared with a conventional matt, acute matt is brighter and will not be quickly shaded even if F-number=5.6 or less as in micro-prism.
2) When focused, the scene is clearly seen in good contrast.
3) Even a slight deflection causes the scene to become obscure, therefore it is easy to focus. It is easy to focus at any point of the scene because of acute matt over the entire surface.
4) Since the matt is very fine, the scene can be observed in detail.

- Thus, the acute matt is a focal matt which has been designed and manufactured by using the merits of micro prism (bright, clear and easy to focus) and those of matt surface (it doesn't darkens too fast, and the scene is not inharmonious as in micro-prism).

8. Exposure Control, Indication Interlocking Mechanism

8-1. General description

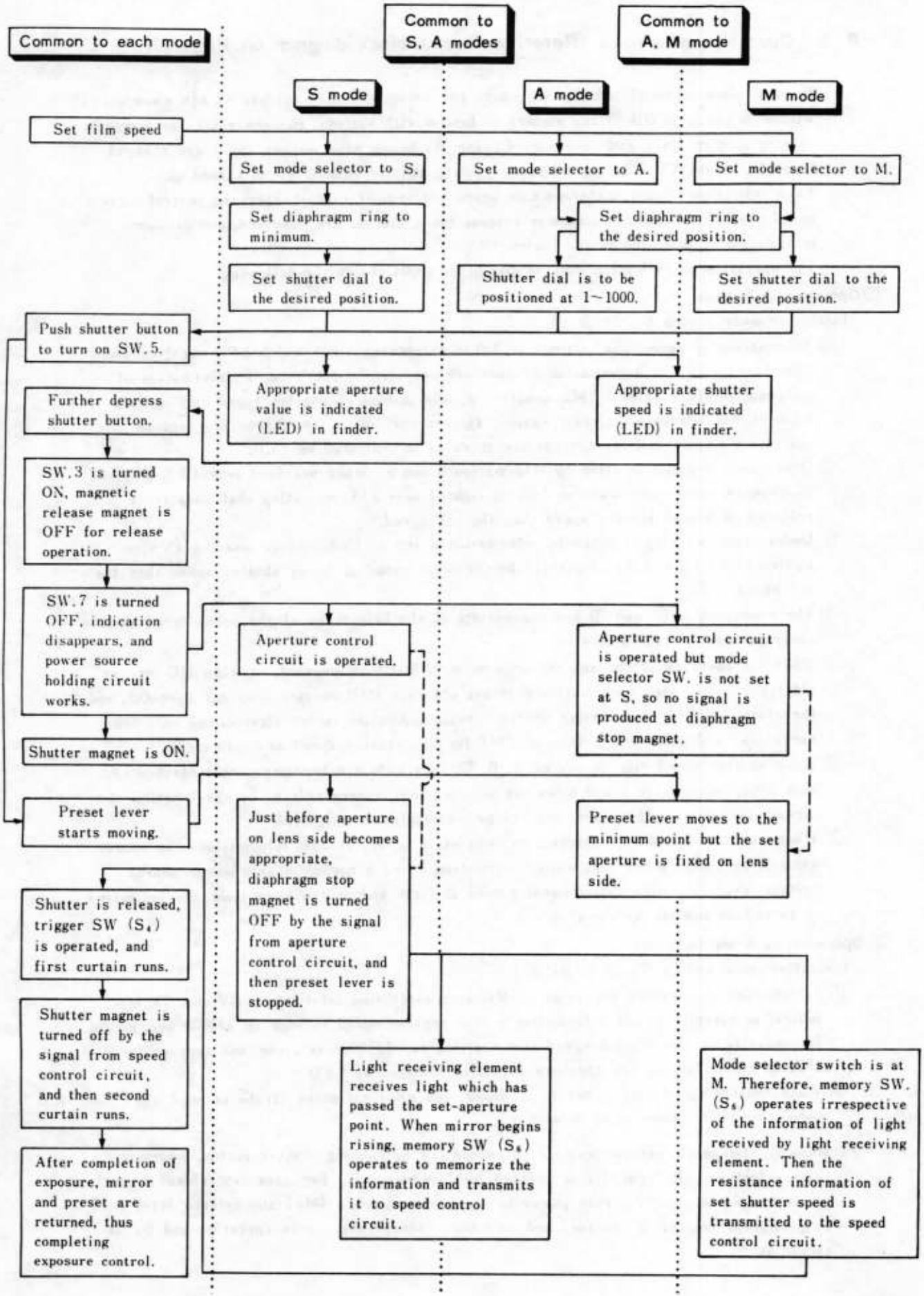


1) The exposure control of this camera includes manual control of X-1 and XE, and aperture priority AE control, shutter speed priority AE control, provided with M mode, A mode and S mode indications beside the shutter dial which can be selected by the mode selector lever.

2) In shutter speed priority AE control (S mode), the aperture corresponding to the set shutter speed is indicated in the finder. So, MD coupler (which transmit the minimum aperture 16, 22 or 32 signal of the lens to the body) is installed on the body and lens sides in addition to MC coupler.

3) When shutter button is pushed to turn on the power source and metering switch, shutter speed or aperture value is indicated (LED) according to the mode setting. That is, the indication is done by full aperture metering and when SW.7 is turned OFF after shutter release, the indication disappears. After that, exposure control is done by instantaneous stop-down metering system.

8 - 2. Exposure control in each mode


Common to each mode
Common to S, A modes
Common to A, M mode
S mode
A mode
M mode
Set film speed
Set mode selector to S.
Set mode selector to A.
Set mode selector to M.
Set diaphragm ring to minimum.
Set diaphragm ring to the desired position.
Set shutter dial to the desired position.
Shutter dial is to be positioned at 1~1000.
Set shutter dial to the desired position.
Push shutter button to turn on SW. 5.
Further depress shutter button.
Appropriate aperture value is indicated (LED) in finder.
Appropriate shutter speed is indicated (LED) in finder.
SW. 3 is turned ON, magnetic release magnet is OFF for release operation.
SW. 7 is turned OFF, indication disappears, and power source holding circuit works.
Aperture control circuit is operated.
Aperture control circuit is operated but mode selector SW. is not set at S, so no signal is produced at diaphragm stop magnet.
Shutter magnet is ON.
Preset lever starts moving.
Just before aperture on lens side becomes appropriate, diaphragm stop magnet is turned OFF by the signal from aperture control circuit, and then preset lever is stopped.
Preset lever moves to the minimum point but the set aperture is fixed on lens side.
Shutter is released, trigger SW (S_4) is operated, and first curtain runs.
Shutter magnet is turned off by the signal from speed control circuit, and then second curtain runs.
After completion of exposure, mirror and preset are returned, thus completing exposure control.
Light receiving element receives light which has passed the set-aperture point. When mirror begins rising, memory SW (S_6) operates to memorize the information and transmits it to speed control circuit.
Mode selector switch is at M. Therefore, memory SW. (S_6) operates irrespective of the information of light received by light receiving element. Then the resistance information of set shutter speed is transmitted to the speed control circuit.

9. Description of Circuit

9-1. Operation of circuit (Refer to Circuit block diagram on Page. 22)

1) When winding is completed, S_1 (exposure prevention SW. and release switch when auto winder is used) is ON. When camera is loaded with battery, condenser C_6 for magnetic release magnet (M_1) and condenser C_5 for diaphragm stop magnet (M_2) are charged.

2) When S_5 (main SW.) is turned on by pushing shutter button, T_1 is turned on. Then indication circuit, metering film speed operational circuit, aperture control circuit, speed control circuit and magnetic release block circuit are operated, and exposure information is indicated in the finder.
The operation of indication control circuit is explained in the following.

[1] Operation in S mode:

(Indication mode switch S_{13} is at S)

① Information of operational circuit of scene brightness (BV) which SPC receives and film speed (SV): a, information of aperture setvalue by MC ring: b, information of minimum aperture value by MD coupler: d, information of shutter speed setting (via LED flicker prevention circuit against fluorescent light) : e. These are sent to indication circuit and the appropriate aperture is indicated by LED.

② Over-range warning is given by information b and e. When standard lens (F 1.4/50 mm) is mounted, over-range warning (△) is lighted over f16, indicating that shutter is released at higher shutter speed than the set speed.

③ Under-range warning is given by information d and e. Under-range warning (▽) is lighted below f1.4, indicating that shutter is released at lower shutter speed than the set speed.

④ The exposures in ② and ③ are appropriate if the brightness of the scene is within the control range of the camera.

⑤ When the aperture is not set at minimum with MD lens mounted, or when MC lens or old type lens is used, information d is not obtained (MD coupler does not operate), and therefore, LED for appropriate aperture value indication is not lighted, and only over-range (△) and under-range warning (▽) for set shutter speed are indicated.

⑥ When shutter speed dial is set at X, B, ○, information e becomes nearly earthed. At that time, information a and b become nearly power source voltage by the function of circuit not shown. Therefore, over-range warning (△) is lighted.

⑦ When exclusive strobo is mounted, on completion of its charge, information e is nearly earthed by signal p via T_{10}, while information a and b become nearly power source voltage, therefore over-range warning (△) is light and at the same time, the indication is turned on and off by signal q.

[2] Operation in A and M modes:

(Indication mode switch S_{13} is at M, A.)

① Information of aperture set-value by MC ring containing information BV and SV in indication circuit: b, and information e that shutter speed is kept at 1/1000 sec. by S_{13} irrespective of the shutter speed dial position (1~1/1000) is given, and appropriate shutter speed for the set aperture value is indicated by LED.

② When shutter speed dial is set at X, B, ○, and when exclusive strobo is used, the indication is the same as in S mode.

3) When S_3 (magnetic release switch) is turned ON by pushing shutter button, magnetic release lock circuit input (f) is earthed, and condenser C_6 for magnetic release magnet is discharged through T_6, then power is supplied to magnet (M_1) and release lever held by permanent magnet is released and then body side preset starts operating and S_7 is turned OFF.

4) When S_7 is turned OFF, the following circuit operations are performed.

- T_{11} operates and power supply to camera continues even with finger off shutter button, and LED in finder goes out.
- T_{12} operates to supply power to shutter magnet (M_3) in shutter block.
- Voltage is applied to the base of T_{13} and preparation is made for the operation of diaphragm magnet (M_2) by exposure control circuit output k.

The exposure control operation is explained in the following.

[1] Operation in S mode

(Diaphragm control switch S_{11} is at S)

① Exposure control circuit compares shutter speed information h with stop-down metering information g (SPC metering information and film speed information in stop-down) and sends the output k to diaphragm magnet in the form of signal.

② When LED in finder before camera operation is F 5.6 for instance, $h<g$ before preset operation and diaphragm magnet is kept attracted and preset lever is operated to stop down.

③ Just before F 5.6, $h=g$, and signal is given to diaphragm magnet by output k to turn on magnet M_2. Then magnetic piece lever, held by permanent magnet, is operated to stop preset lever and to stop lens side aperture at F 5.6.

- When over-range (△) is lighted, $h<g$ before present operation and still $h<g$ even when aperture is minimum (F16). Therefore, no signal is given to diaphragm magnet, and preset lever operates over full stroke.
- When under-range (▽) is lighted, $h \geqq g$ before preset operation. So, signal is given to diaphragm magnet by output k when S_7 is turned ON, thus stopping preset lever to keep lens side aperture fully open.

④ When shutter speed dial is set at X, B, ○, information h is nearly earthed, and its relation with stop-down metering information g is always $h<g$, and the aperture on lens side is the value set at that time.

⑤ When exclusive strobo is mounted and completely charged, information h is nearly earthed by signal p irrespective of shutter speed dial position. And always $h<g$, and the aperture on lens side is the value set at that time.

[2] Operation in A mode

(Diaphragm control switch S_{11} is at M, A.)

① Irrespective of shutter speed dial position ranging from 1 to 1/1000, input h to exposure control circuit is nearly set at 1 V because S_{11} is at M or A.

② Even when the exposure of this camera is minimum, stop-down metering information g is over 1 V. Therefore, $h<g$, and no signal is sent to diaphragm magnet the same as in the abovementioned over-range (△) indication. Then, preset lever operates over full stroke, and the aperture on lens side is the value set at that time.

③ When shutter speed dial is set at X, B, ○, and when exclusive strobo is used, the operations are the same as in S mode.

5) On completion of exposure control and releasing of mirror, memory switch S_6 is turned OFF.

When in A or S mode, the scene brightness, passed through the aperture, is measured by SPC and stored in condenser C_2. When in M mode, only shutter speed setting information is stored in condenser C_2.

6) When mirror raising is completed, shutter is released and trigger switch S_4 is turned OFF by the function of timing cam for exposure control on shutter side.

7) When S_4 is turned OFF, transistor switch Q_{31} is turned OFF via counter circuit and Q_{46} turned ON. Then shutter time is counted by the expansion collector current of transistor Q_{45} and counting condenser, and the result is transmitted to speed control circuit.

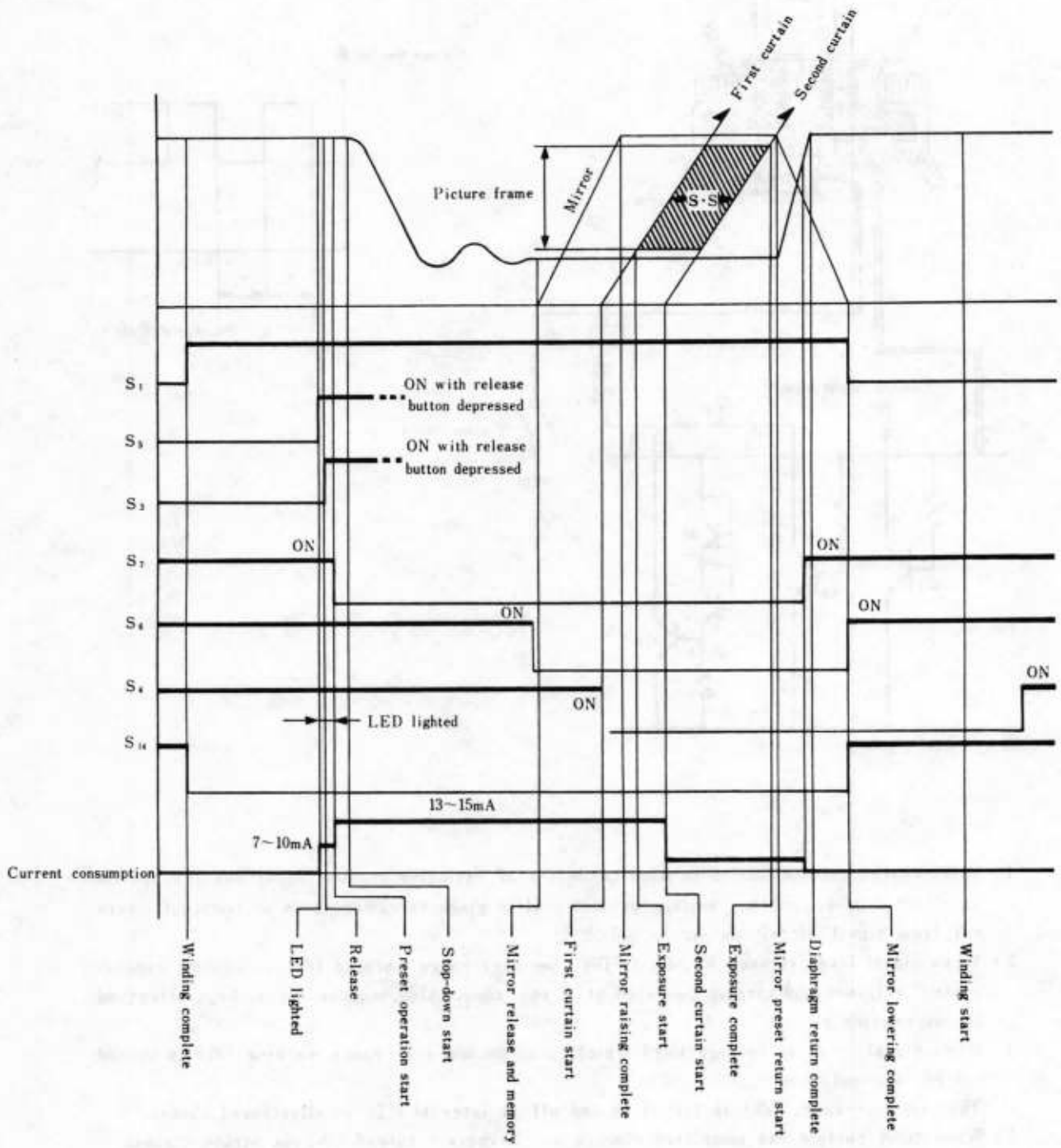
8) When the specified time has elapsed after opening of the first curtain, shutter magnet M_3 is demagnetized by signal m from speed control circuit, thus closing the second curtain to complete the exposure.

- When shutter speed dial is at X, B, ○, the circuit input becomes nearly earthed at X sec. Then output information i is sent to magnet M_3 via speed control circuit so that shutter speed is at least 1/125 sec.
  When exclusive strobo is mounted and fully charged, the circuit is operated at X sec. by information p irrespective of photography mode and shutter speed dial position, and then information is sent to magnet M_3 so that shutter speed is at least 1/125 sec. However, M_3 is sometimes maintained via T_9, and the strobo is operated by synchro switch X-contact and then no information exists. Therefore, M_3 is released, allowing the second curtain to run, thus completing the strobo photography.

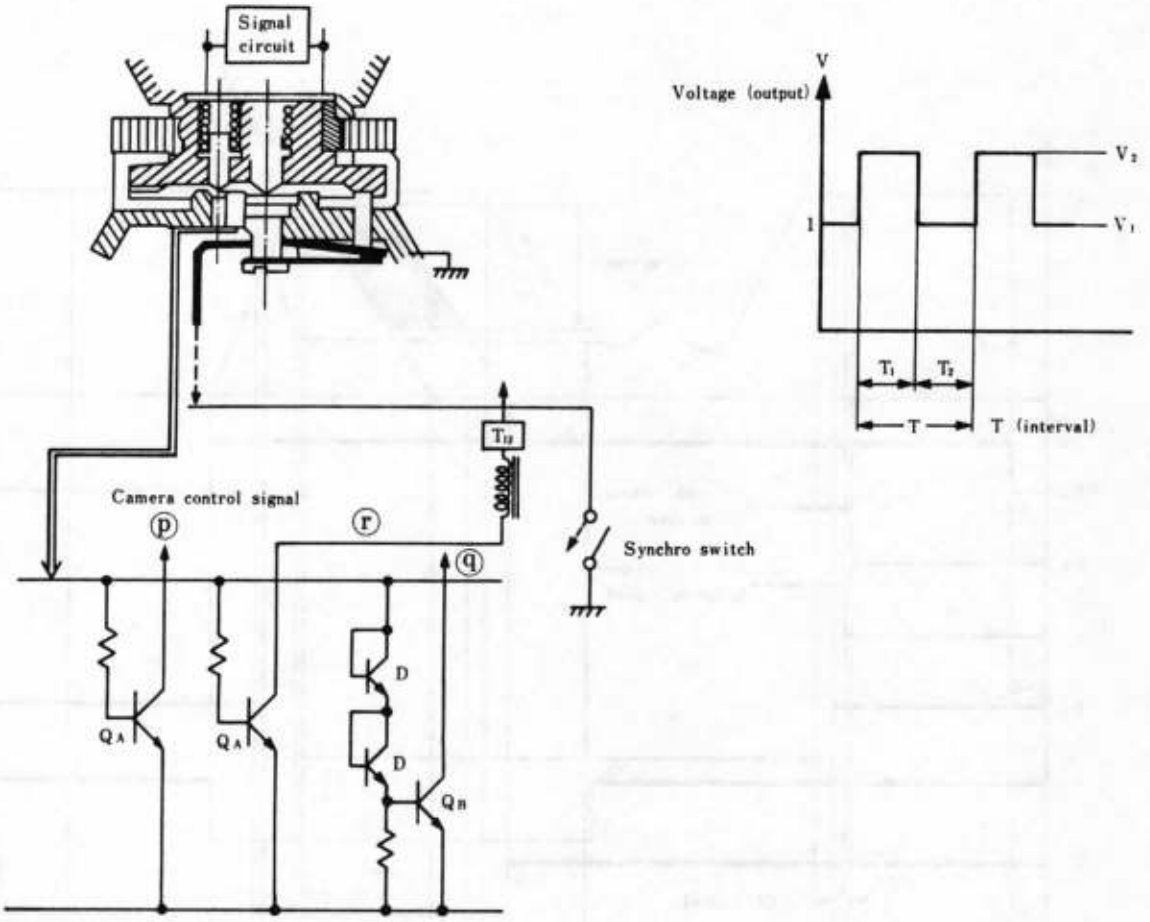
9-2. Mechanical switch and operation

Mark	Name	Function
S_1	Exposure prevention SW. for magnetic release.	Interlocked with film advance release lever and turned ON when winding lever is returned to start position.
S_3	Release switch.	Interlocked with release plate and turned ON with 1 mm shutter button stroke.
S_4	Trigger switch (timing SW.)	Located on shutter side, interlocked with timing cam, and counting of exposure time is started at OFF.
S_5	Main switch (indication SW.)	Interlocked with released plate and supplies power to camera and operates LED.
S_6	Memory switch	Interlocked with mirror stop lever and turned OFF when mirror starts rising and used to memorize stop-down metering information.
S_7	Exposure control trigger switch	Located in magnetic release magnet block, interlocked with magnetic piece and maintains power source at OFF. Turns on diaphragm magnet and shutter magnet and turns off LED.
S_8	Indication mode selector switch	Interlocked with photography mode selector.
S_9	AUTO/MANUAL changeover switch	Interlocked with photography mode selector.
S_{11}	Exposure control change switch	Interlocked with photography mode selector.
S_{12}	MD switch	Interlocked with MD coupler when MD lens is mounted and set at minimum exposure.
S_{13}	Indication mode selector switch	Interlocked with photography mode selector.
S_{14}	Winding order switch for winder	Gives winding order to winder from camera side when auto winder is mounted. Interlocked with winding stop lever.

9 - 3. Mechanical switch time chart.

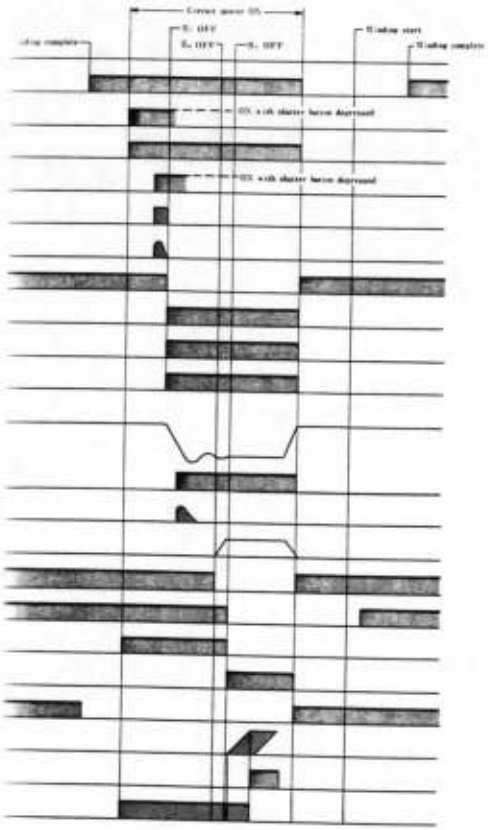


9-4. Composition with exclusive strobo, and synchro circuit

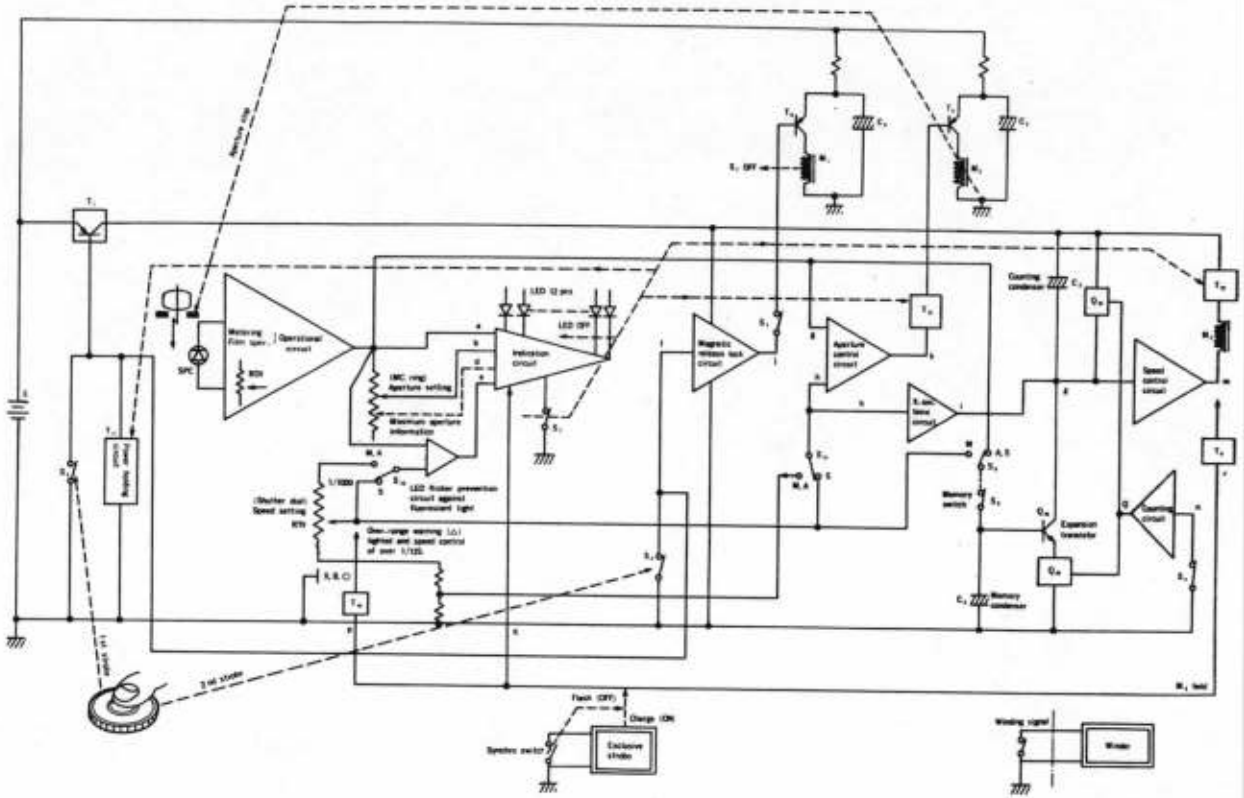


1) When charge voltage stored in main condenser of exclusive strobo (8668) has reached the specified degree, constant voltage pulse signal is given to camera side at constant interval from signal circuit on strobo side.
2) When signal level is over V_1, Q_A is ON. So, over-range warning (△) is lighted, exposure control released and circuit operated at X sec. time. Also, magnet M_3 is kept attracted by information r.
3) When signal level is voltage (V_2) which turns on Q_B, over-range warning (△) is turned off by information q.
   That is, over-range (△) is turned on and off at interval (T) as illustrated above.
4) When first curtain has completed running and X-contact turned ON, the strobo flashes and information r goes out. Then magnet M_3 is released allowing the second curtain to run.

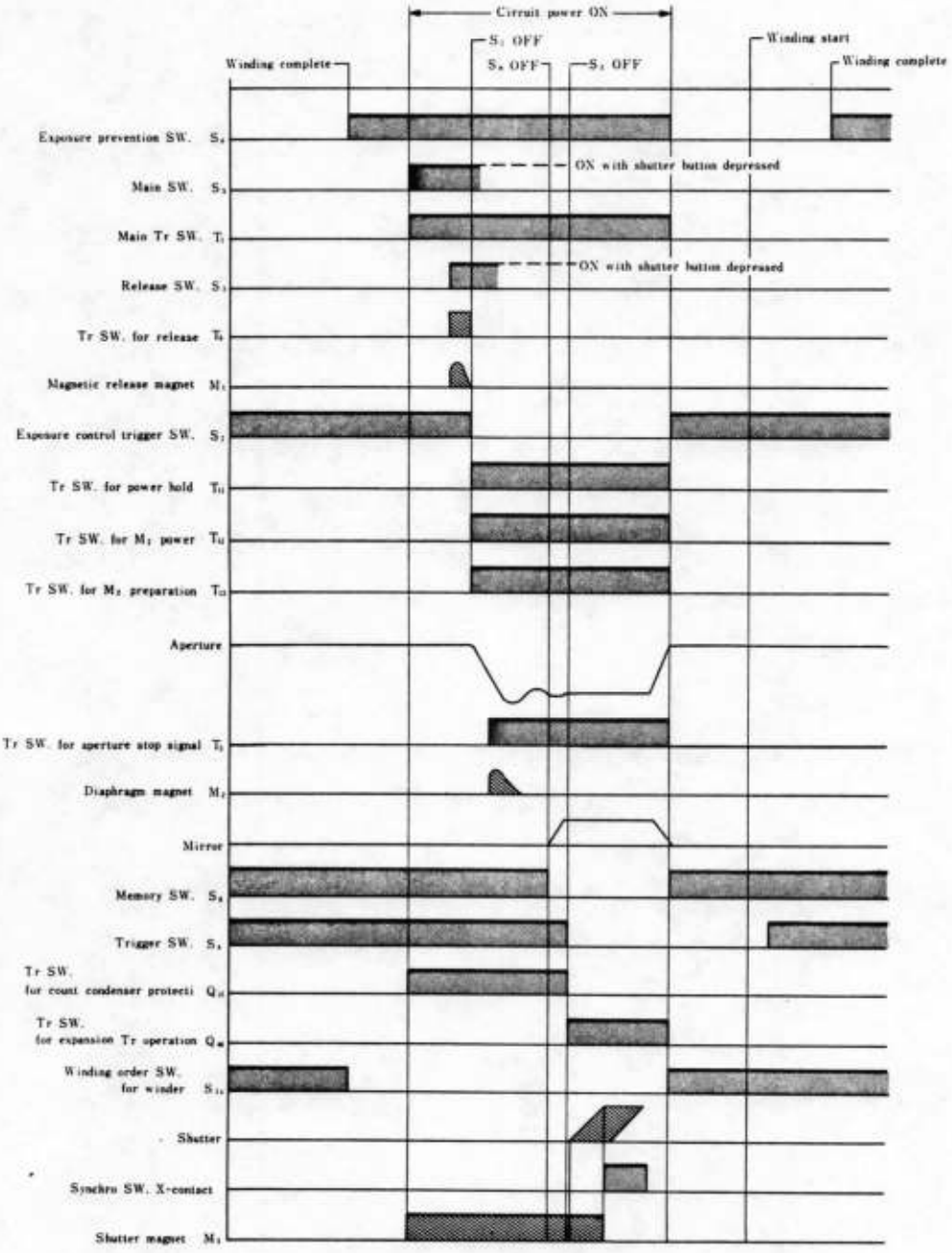
mechanical switch and circuit switch



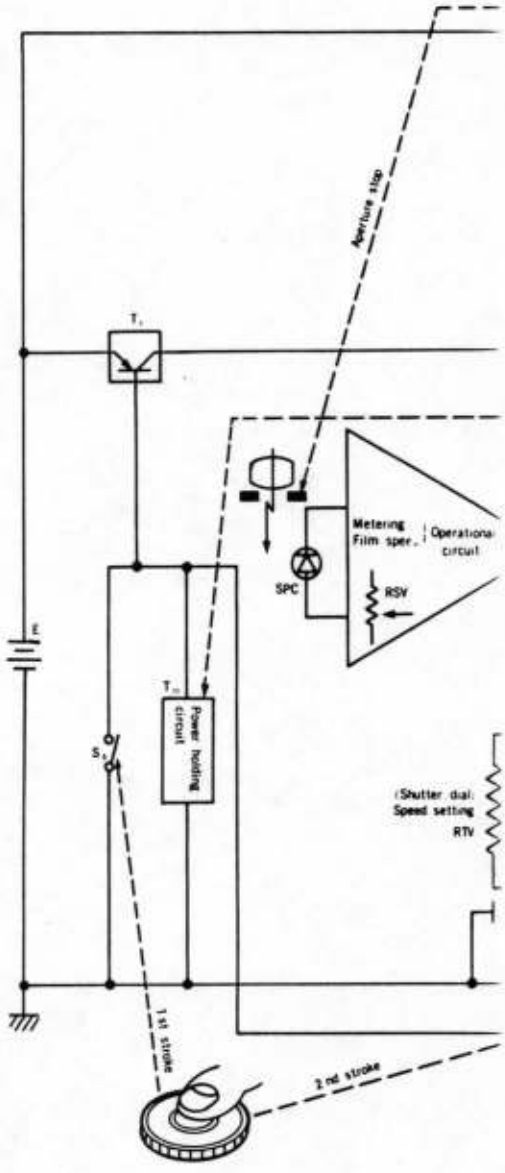
9 - 6 Circuit block diagram

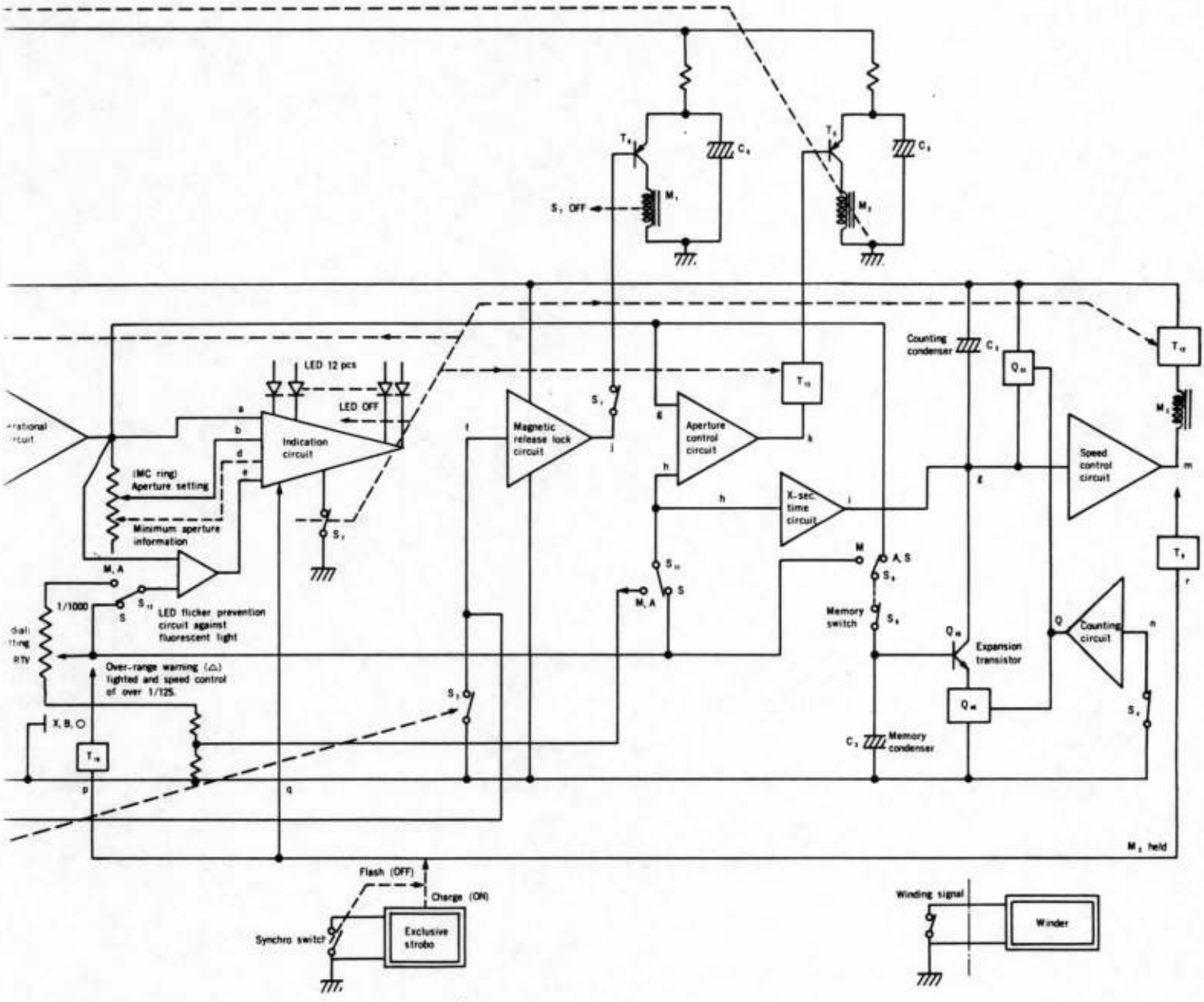


9-5. Time chart of mechanical switch and circuit switch.



9-6 Circuit block diagram




LED 12 pcs
LED OFF
Indication circuit
(MC ring) Aperture setting
Minimum aperture information
LED flicker prevention circuit against fluorescent light
Over-range warning (△) lighted and speed control of over 1/125.
Magnetic release lock circuit
Aperture control circuit
X-sec. time circuit
Speed control circuit
Counting condenser
Memory switch
Memory condenser
Expansion transistor
Counting circuit
S1 OFF
M, held
Flash (OFF)
Charge (ON)
Synchro switch
Exclusive strobo
Winding signal
Winder

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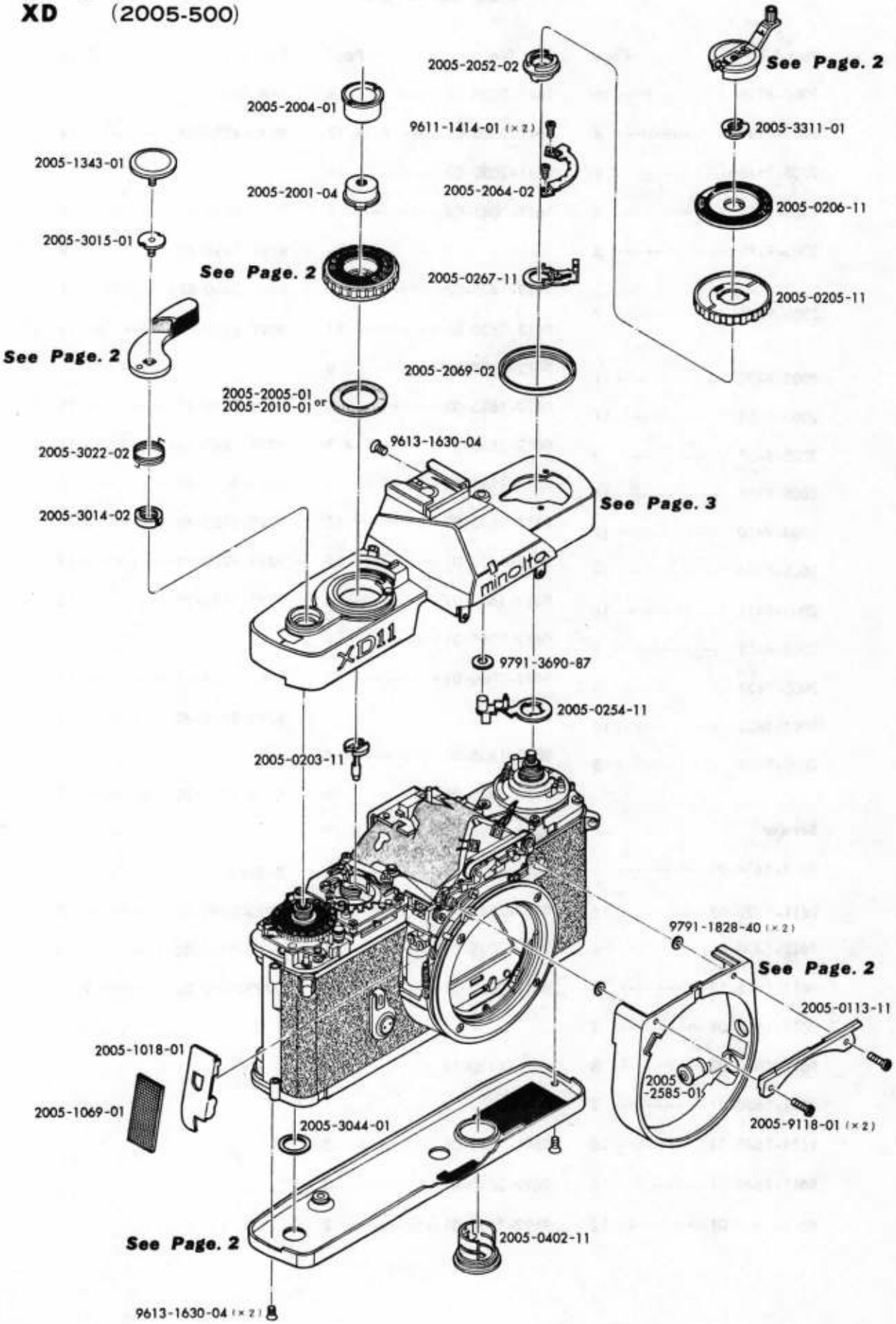
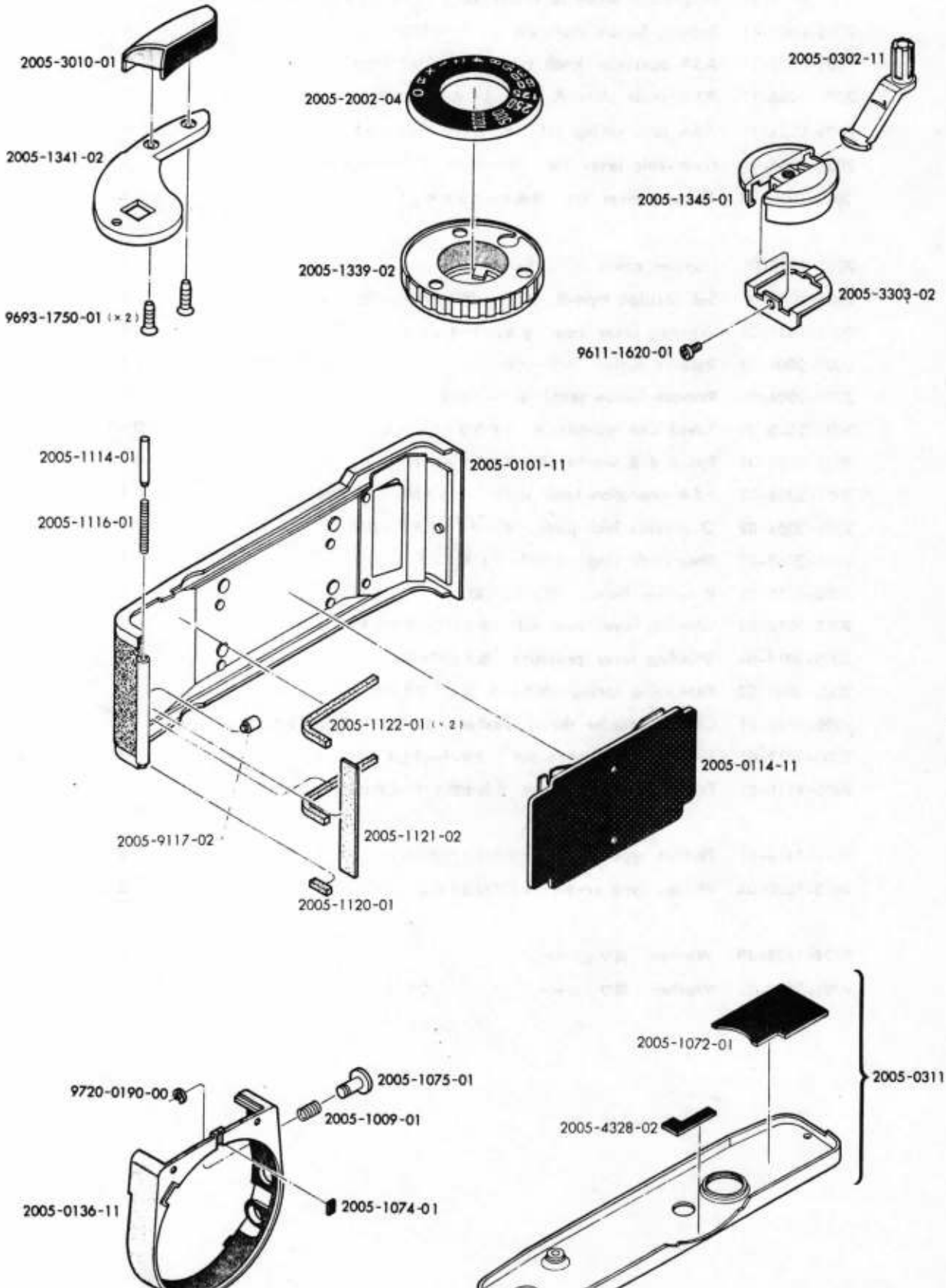
9611-1616-02	8
9611-1620-01	2
9611-1625-01	10
9611-1640-01	14
9611-1667-01	12
9611-2025-02	4, 8
9611-2030-01	5, 14, 17
9611-2030-02	15
9611-2045-04	9
9612-1420-02	5, 7
9612-1620-01	11
9612-1625-01	5, 8
9612-1625-02	11
9612-1630-01	4, 5
9612-1635-01	11
9612-1635-02	15
9612-1650-01	17
9612-1667-02	8
9612-2050-01	6
9612-2080-01	17
9613-1435-01	9
9613-1445-01	16
9613-1630-02	8, 17
9613-1630-04	1
9613-2025-01	4
9613-2025-02	17
9613-2035-01	14
9615-1420-12	9
9691-1740-01	3
9692-2040-01	3
9693-1750-01	2
Washer	
9790-4270-40	14
9791-1828-40	1
9791-1830-40	9
9791-3960-87	1
9791-4270-40	14
9792-1735-40	11
9792-1840-40	11
9792-2050-40	12
9792-3150-40	11, 12, 15
9792-4270-40	14
9792-7194-20	15
9793-1748-40	10
9793-2660-20	15
9794-7194-20	15
E-Ring	
9720-0080-00	7
9720-0150-00	16
9720-0190-00	2, 11

XD-11 (2005-100)
XD- 7 (2005-300)
XD (2005-500)



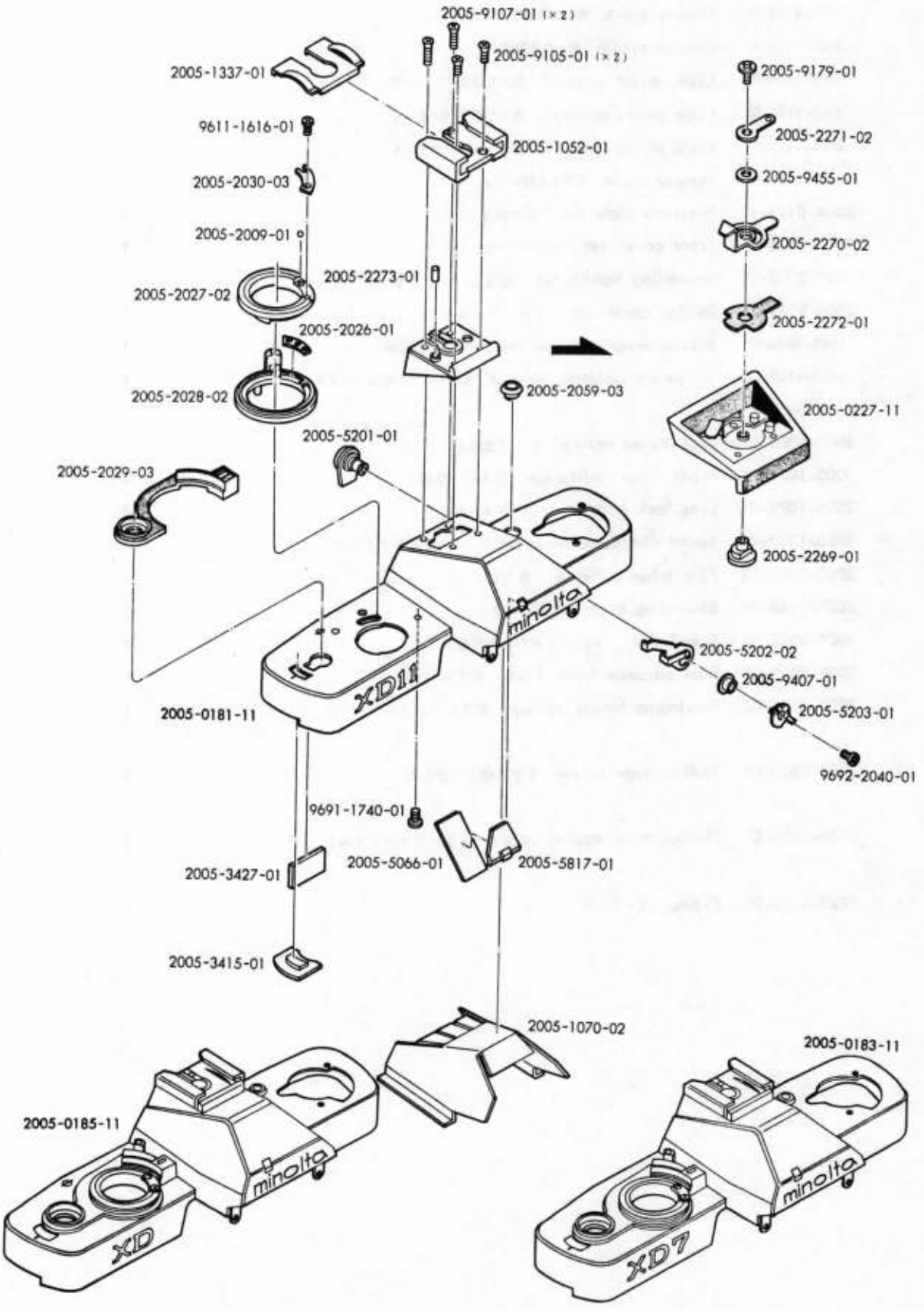
Part No. 部品番号	Part Name 部品名称	Qty 員数
2005-0113-11	Diaphragm value in finder set 絞りインファインダーセット	1
2005-0203-11	Release button shaft set レリーズ釦軸セット	1
2005-0205-11	ASA operation knob set ＡＳＡ操作ノブセット	1
2005-0206-11	ASA scale plate-A set ＡＳＡ目盛板Aセット	1
2005-0254-11	ASA lock spring set ＡＳＡロックバネセット	1
2005-0267-11	Over-ride lever set オーバーライドレバーセット	1
2005-0402-11	Battery cover set 電池ケースぶたセット	1
2005-1018-01	Damper cover ダンパーカバー	1
2005-1069-01	Set position tape-B 前カバー位置決めテープB	1
2005-1343-01	Winding lever cap 巻上レバーキャップ	1
2005-2001-04	Release button レリーズ釦	1
2005-2004-01	Release button seat レリーズ釦座	1
2005-2005-01	Speed dial washer-A ＳＰＤワッシャーA	0～1
2005-2010-01	Speed dial washer-B ＳＰＤワッシャーB	0～1
2005-2052-02	ASA operation knob shaft ＡＳＡ操作ノブ回転軸	1
2005-2064-02	Over-ride lock plate オーバーライドロック板	1
2005-2069-02	Over-ride ring オーバーライドリング	1
2005-2585-01	Pre-view button プレビュー釦	1
2005-3014-02	Winding lever seat nut 巻上レバー座ナット	1
2005-3015-01	Winding lever pressure 巻上レバー押え	1
2005-3022-02	Rewinding spring 巻上レバー戻しスプリング	1
2005-3044-01	Charge coupler thrust washer チャージカプラースラストワッシャー	1
2005-3311-01	Top cover pressure nut 上カバー押えナット	1
2005-9118-01	Front cover set screw 正面上部カバー止めビス	2
9611-1414-01	Phillips type screw 十字穴付なべ頭小ねじ	2
9613-1630-04	Phillips type screw 十字穴付皿小ねじ	3
9791-1828-40	Washer 薄ワッシャー	2
9791-3690-87	Washer 薄ワッシャー	1

XD-11 (2005-100)
XD- 7 (2005-300)
XD (2005-500)



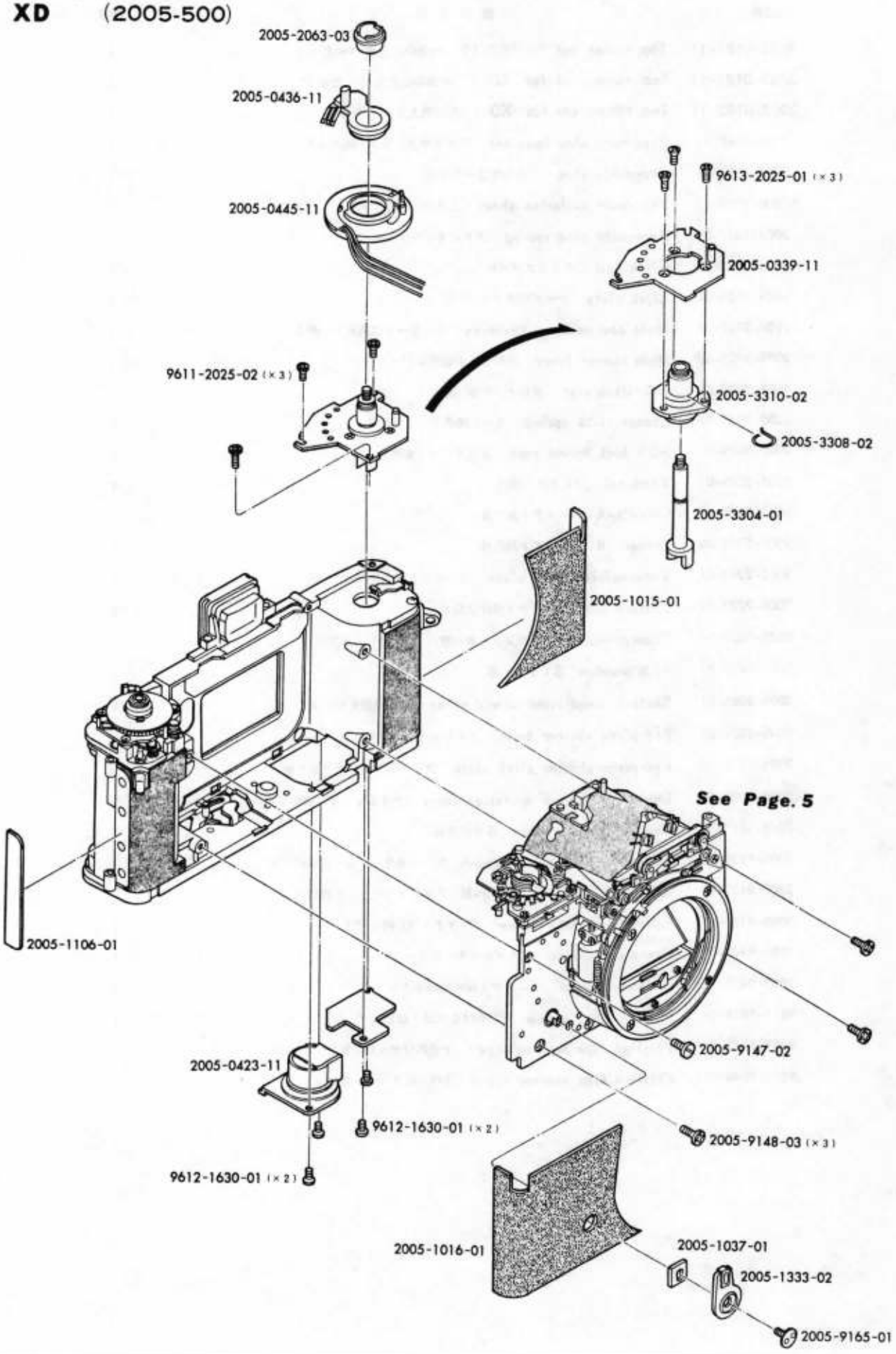
Part No. 部品番号	Part Name 部品名称	Qty 員数
2005-0101-11	Back cover set 裏ぶたセット	1
2005-1114-01	Opening pin-A 裏ぶた着脱用ピンA	1
2005-1116-01	Opening spring 裏ぶた着脱用SP	1
2005-1120-01	Light shield sponge-B 裏ぶた遮光パッキンB	1
2005-1121-02	Light shield sponge-C 裏ぶた遮光パッキンC	1
2005-1122-01	Light shield sponge-A 裏ぶた遮光パッキンA	2
2005-9117-02	Opening screw 裏ぶた着脱用ビス	1
2005-0114-11	Pressure plate set 圧着板セット	1
2005-0136-11	Front cover set 前カバーセット	1
2005-0302-11	Rewinding handle set 巻戻しハンドルセット	1
2005-0311-11	Bottom cover set 下カバーセット	1
2005-1072-01	Bottom cover isolation sheet 下カバー絶縁シート	1
2005-4328-02	S_1 switch isolation sheet-A S_1 スイッチ絶縁シートA	1
2005-1009-01	Lock button spring ロック釦SP	1
2005-1074-01	Front cover indication 前カバー指標	1
2005-1075-01	Lens lock button レンズロック釦	1
2005-1339-02	Speed dial/Function selector スピードダイヤル	1
2005-1341-02	Film advance lever 巻上レバー	1
2005-1345-01	Rewinding knob 巻戻しノブ	1
2005-2002-04	Speed dial スピードダイヤル銘板	1
2005-3010-01	Film advance lever knob 巻上レバー指当て	1
2005-3303-02	Rewinding handle spring 巻戻しハンドルSP	1
9611-1620-01	Phillips type screw 十字穴付なべ頭小ねじ	1
9693-1750-01	Phillips type tapping screw 十字穴付タッピンねじ	2
9720-0190-00	E-ring E-リング	1

XD-11 (2005-100)
XD- 7 (2005-300)
XD (2005-500)



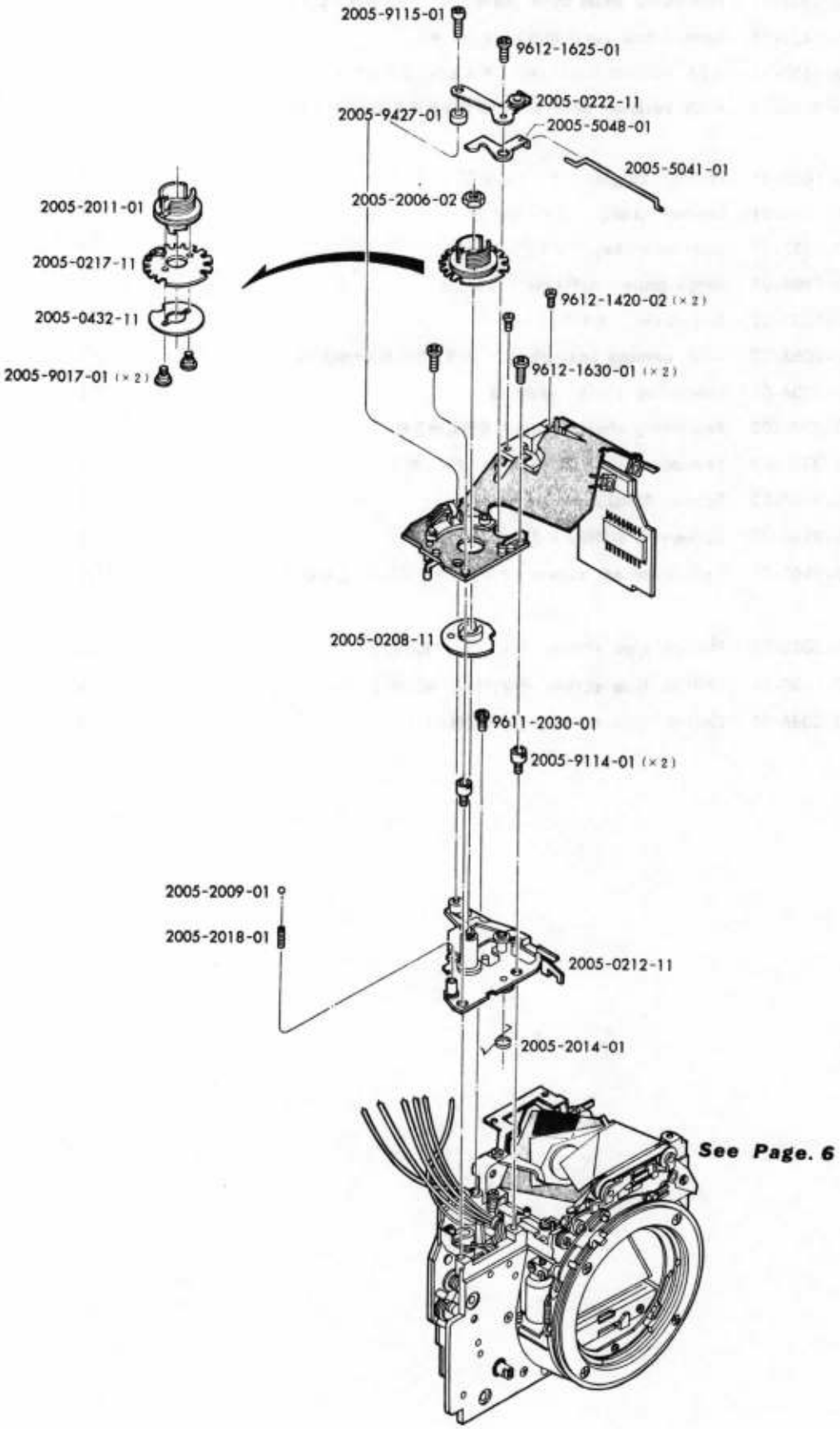
Part No. 部品番号	Part Name 部品名称	Qty 員数
2005-0181-11	Top cover set for XD-11 －100用上カバーセット	1
2005-0183-11	Top cover set for XD-7 －300用上カバーセット	1
2005-0185-11	Top cover set for XD －500用上カバーセット	1
2005-0227-11	Accessory shoe base set アクセサリーシュー座セット	1
2005-1052-01	Accessory shoe アクセサリーシュー	1
2005-1070-02	Top cover isolation sheet 上カバー絶縁シート	1
2005-1337-01	Accessory shoe spring アクセサリーシューバネ	1
2005-2009-01	Click ball クリックボール	1
2005-2026-01	Click plate モード切換クリック板	1
2005-2027-02	Mode change lever pressure 撮影モード切換レバー押え	1
2005-2028-02	Mode change lever 撮影モード切換レバー	1
2005-2029-03	Indication seat 撮影モード表示座	1
2005-2030-03	Change click spring モード切換クリックＳＰ	1
2005-2059-03	ASA lock button seat ＡＳＡロック釦座	1
2005-2269-01	Terminal コンタクト接点	1
2005-2270-02	Contact-A コンタクト接片Ａ	1
2005-2271-02	Contact-B コンタクト接片Ｂ	1
2005-2272-01	Terminal isolation plate コンタクト接点絶縁板	1
2005-2273-01	Contact pin コンタクト接片連動ピン	1
2005-3415-01	Counter window カウンター表示窓	1
2005-3427-01	SLS window ＳＬＳ表示窓	1
2005-5066-01	Shutter speed light shield sheet ＳＳ用遮光シート	1
2005-5201-01	Eye-piece shutter lever アイシャッターレバー	1
2005-5202-02	Eye-piece shutter click plate アイシャッタークリック板	1
2005-5203-01	Eye-piece shutter operation lever アイシャッター操作レバー	1
2005-5817-01	Shutter speed window ＳＳ照明窓	1
2005-9105-01	Accessory shoe set screw-A アクセサリーシュー前取付ビス	2
2005-9107-01	Accessory shoe set screw-B アクセサリーシュー後取付ビス	2
2005-9179-01	Contact pressure screw コンタクト接片押えビス	1
2005-9407-01	Eye-piece collar アイシャッターカラー	1
2005-9455-01	Isolation collar コンタクト接片絶縁カラー	1
9611-1616-01	Phillips type screw 十字穴付なべ頭小ねじ	1
9691-1740-01	Phillips type tapping screw 十字穴付タッピンねじ	1
9692-2040-01	Phillips type tapping screw 十字穴付タッピンねじ	1

XD-11 (2005-100)
XD- 7 (2005-300)
XD (2005-500)



Part No. 部品番号	Part Name 部品名称	Qty 員数
2005-0339-11	Rewinding shaft base plate set　巻戻軸台板セット	1
2005-0423-11	Battery box set　電池ケースセット	1
2005-0436-11	ASA contact base set　ＡＳＡ接片取付台セット	1
2005-0445-11	ASA resistor base set　ＡＳＡ抵抗体取付台セット	1
2005-1015-01	Leather (Right)　ボディ貼皮右	1
2005-1016-01	Leather (Left)　ボディ貼皮左	1
2005-1037-01	Self-lever key　セルフレバーキー	1
2005-1106-01	Hinge plate　ボディ側ヒンジ重ね板	1
2005-1333-02	Self-lever　セルフレバー	1
2005-2063-03	ASA contact base shaft　ＡＳＡ接片取付台回転軸	1
2005-3304-01	Rewinding shaft　巻戻し軸	1
2005-3308-02	Rewinding shaft spring　巻戻し軸ＳＰ	1
2005-3310-02	Rewinding shaft receiver　巻戻し軸受	1
2005-9147-02	Screw　前枠位置決めビス	1
2005-9148-03	Screw-A　前枠押えビスA	3
2005-9165-01	Self-lever set screw　セルフチャージレバー止めねじ	1
9611-2025-02	Phillips type screw　十字穴付なべ頭小ねじ	3
9612-1630-01	Phillips type screw　十字穴付なべ頭小ねじ	4
9613-2025-01	Phillips type screw　十字穴付皿小ねじ	3

XD-11 (2005-100)
XD- 7 (2005-300)
XD (2005-500)



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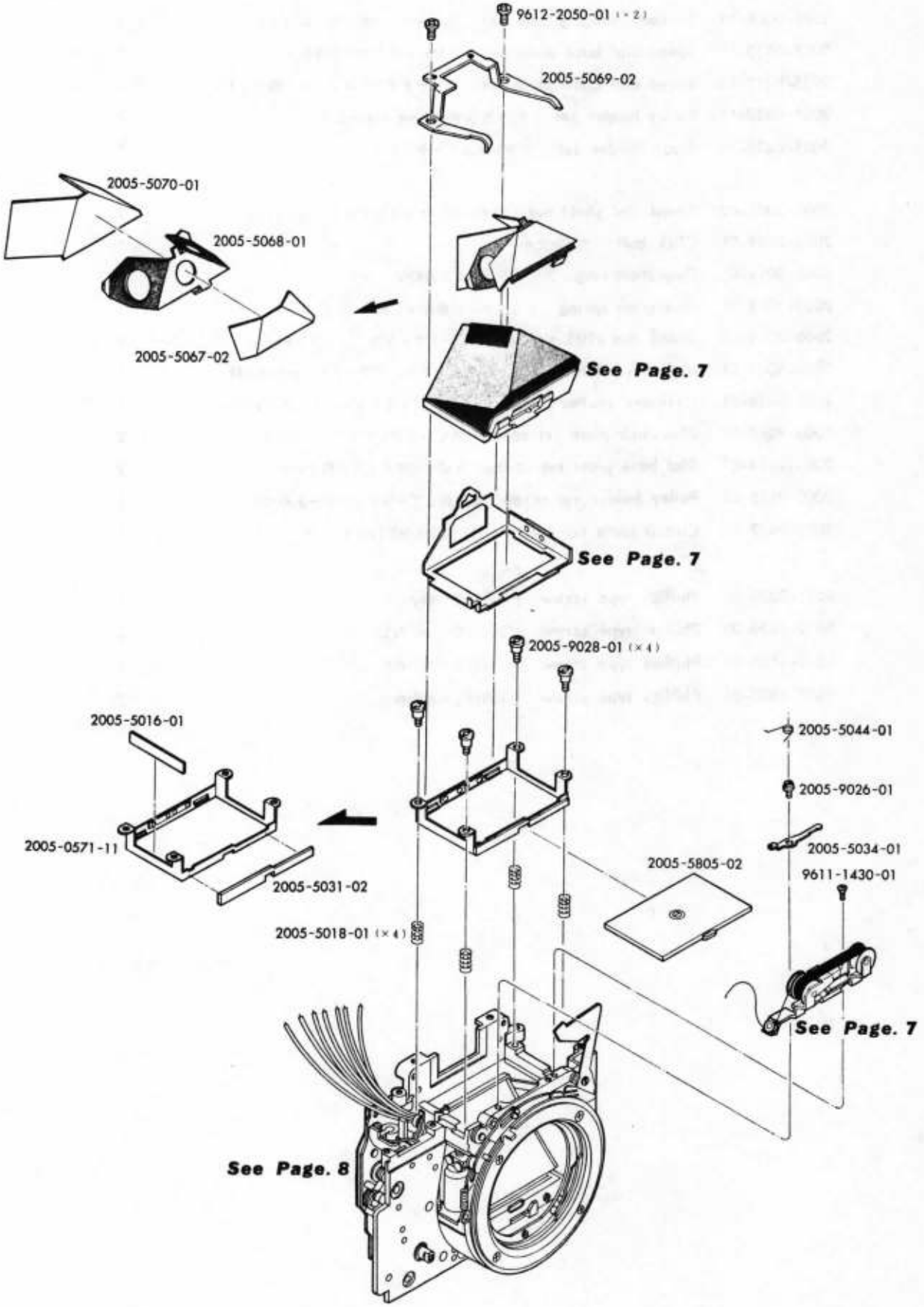
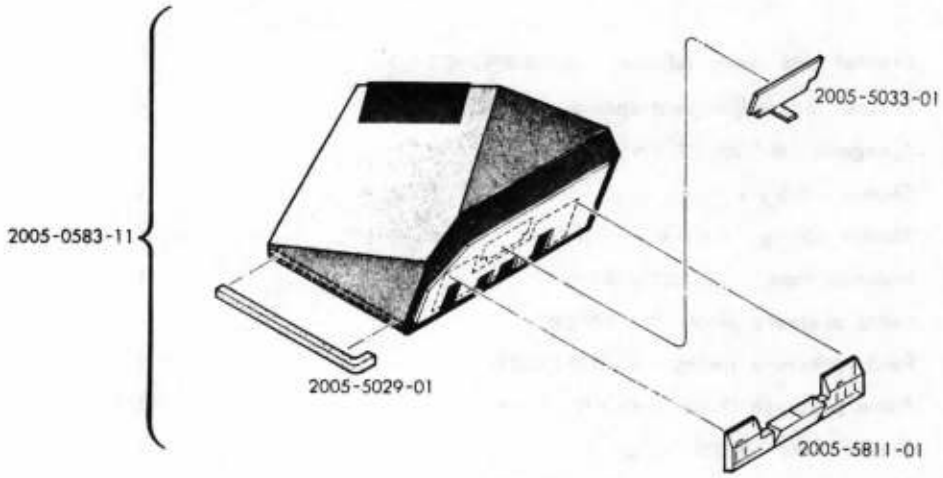
Part No. 部品番号	Part Name 部品名称	Qty 員数
2005-0208-11	Shutter changing cam set　シャッター切換作動カムセット	1
2005-0212-11	Speed dial base plate set　スピードダイヤル台板セット	1
2005-0217-11	Speed dial click plate set　スピードダイヤルクリック板セット	1
2005-0222-11	Pulley holder set　S.S表示プーリーホルダーセット	1
2005-0432-11	Brush holder set　ブラシホルダーセット	1
2005-2006-02	Speed dial shaft nut　スピードダイヤル軸ナット	1
2005-2009-01	Click ball　クリックボール	1
2005-2011-01	Operation ring　スピードダイヤル連結環	1
2005-2014-01	Operation spring　シャッター切換操作ＳＰ	1
2005-2018-01	Speed dial click spring　スピードダイヤルクリックＳＰ	1
2005-5041-01	In-finder shutter rod　ＳＳインファインダーシャッター連結棒	1
2005-5048-01	In-finder shutter lever　ＳＳインファインダーシャッターレバー	1
2005-9017-01	Dial click plate set screw　スピードダイヤルクリック板止めビス	2
2005-9114-01	Dial base plate set screw　スピードダイヤル台板止めビス	2
2005-9115-01	Pulley holder set screw　ＳＳ表示プーリーホルダー止めビス	1
2005-9427-01	Circuit plate set collar　ＴＶ抵抗基板取付カラー	1
9611-2030-01	Phillips type screw　十字穴付なべ頭小ねじ	1
9612-1420-02	Phillips type screw　十字穴付なべ頭小ねじ	2
9612-1625-01	Phillips type screw　十字穴付なべ頭小ねじ	1
9612-1630-01	Phillips type screw　十字穴付なべ頭小ねじ	2

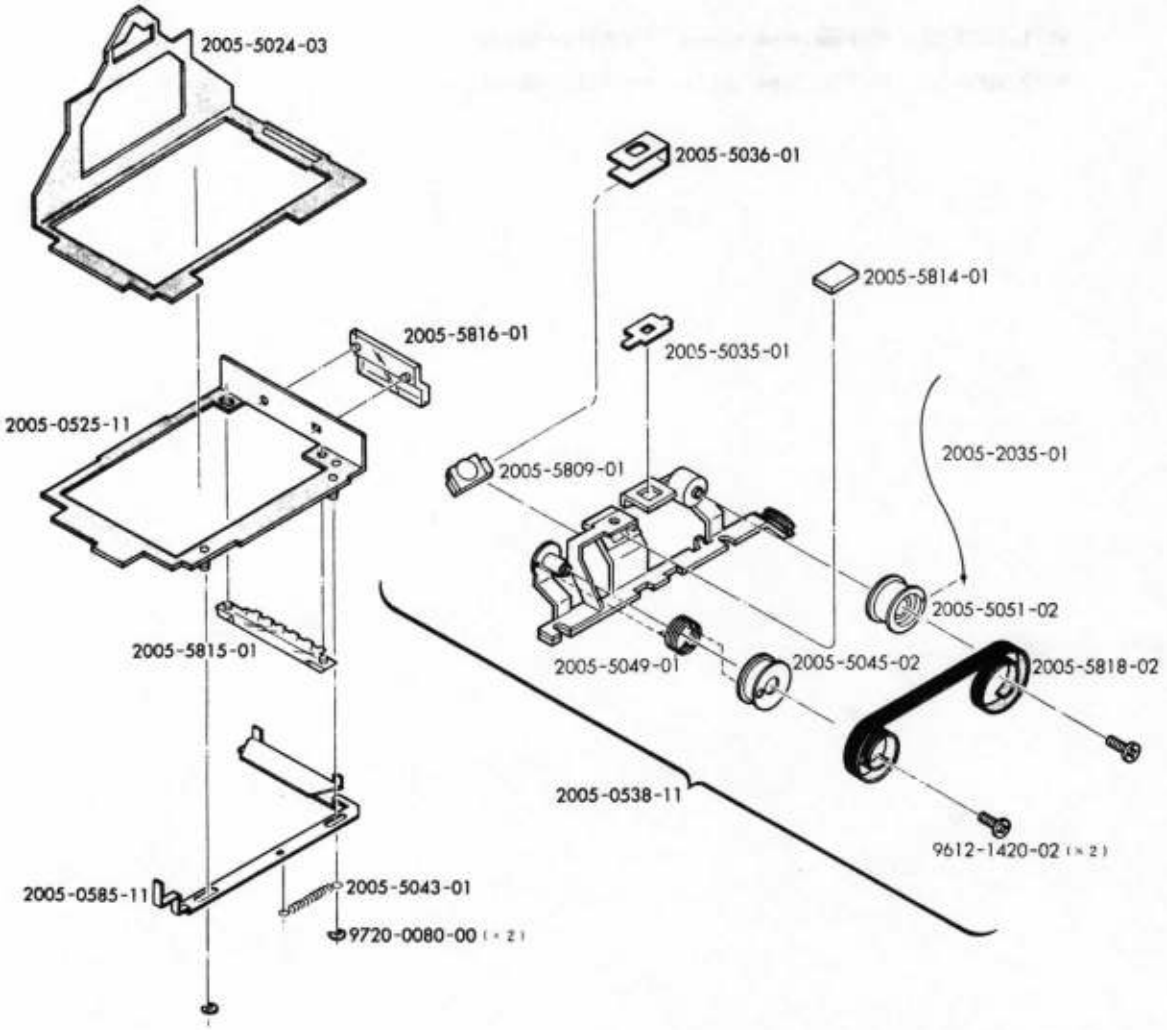
XD-11 (2005-100)
XD- 7 (2005-300)
XD (2005-500)



Part No. 部品番号	Part Name 部品名称	Qty 員数
2005-0571-11	Fresnel lens holder set　焦点板ホルダーセット	1
2005-5016-01	Fresnel lens space adjuster　焦点板間隔調整シート	1
2005-5018-01	Fresnel lens adjustment spring　焦点板調整ＳＰ	4
2005-5031-02	Sponge-B　焦点板防じんモルトプレンＢ	1
2005-5034-01	Shutter　ＳＳシャッター	1
2005-5044-01	Shutter spring　ＳＳシャッターＳＰ	1
2005-5067-02	Isolation tape　半固定抵抗絶縁テープ	1
2005-5068-01	Penta pressure plate　ペンタ押え板	1
2005-5069-02	Penta pressure spring　ペンタ押え板ばね	1
2005-5070-01	Penta pressure sheet　ペンタ押えシート	1
2005-5805-02	Fresnel lens　焦点板	1
2005-9026-01	Shutter axis　ＳＳシャッター軸	1
2005-9028-01	Fresnel adjustment screw　焦点板調整ビス	4
9611-1430-01	Phillips type screw　十字穴付なべ頭小ねじ	1
9612-2050-01	Phillips type screw　十字穴付なべ頭小ねじ	2

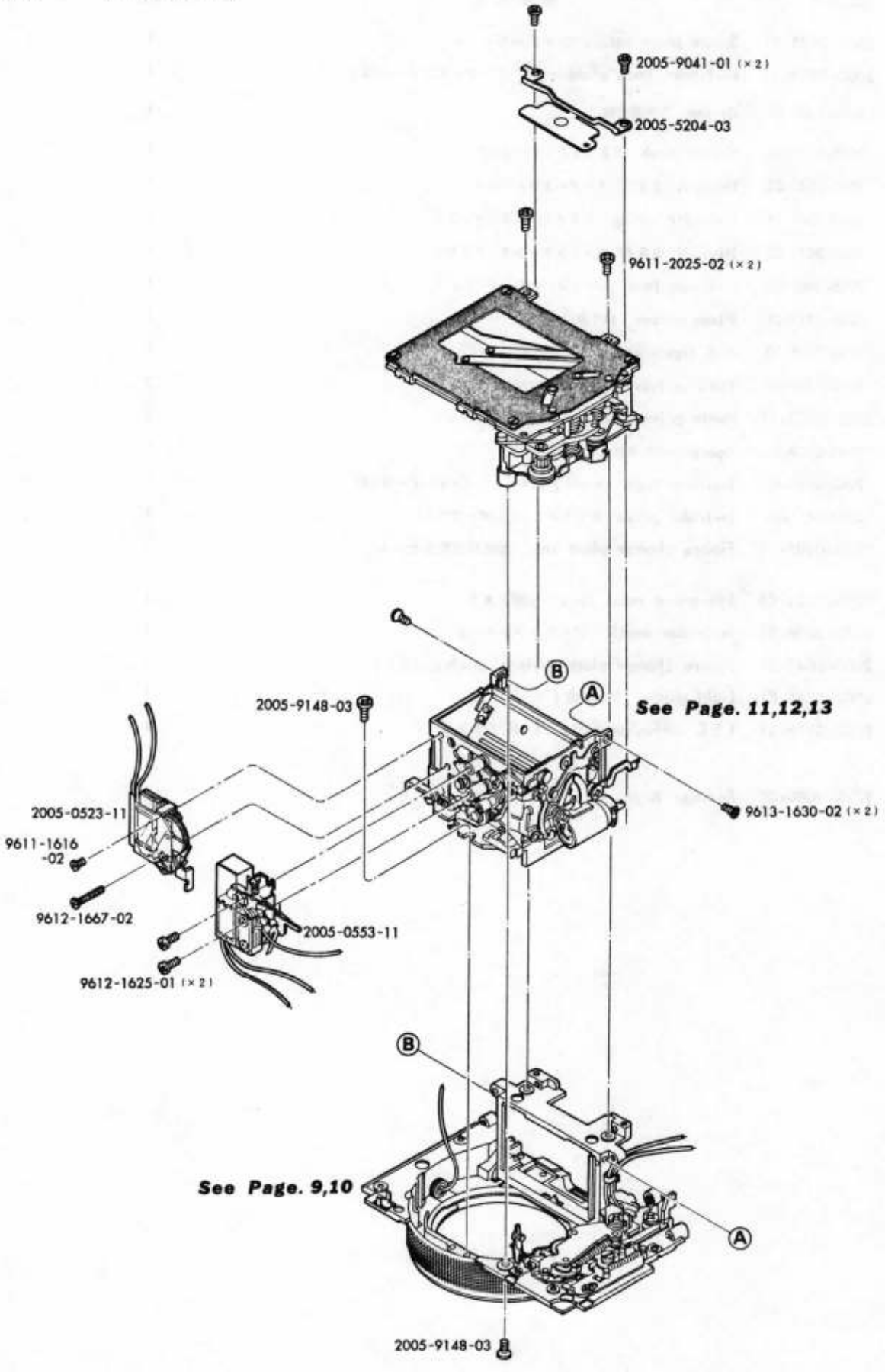
XD-11 (2005-100)
XD- 7 (2005-300)
XD (2005-500)





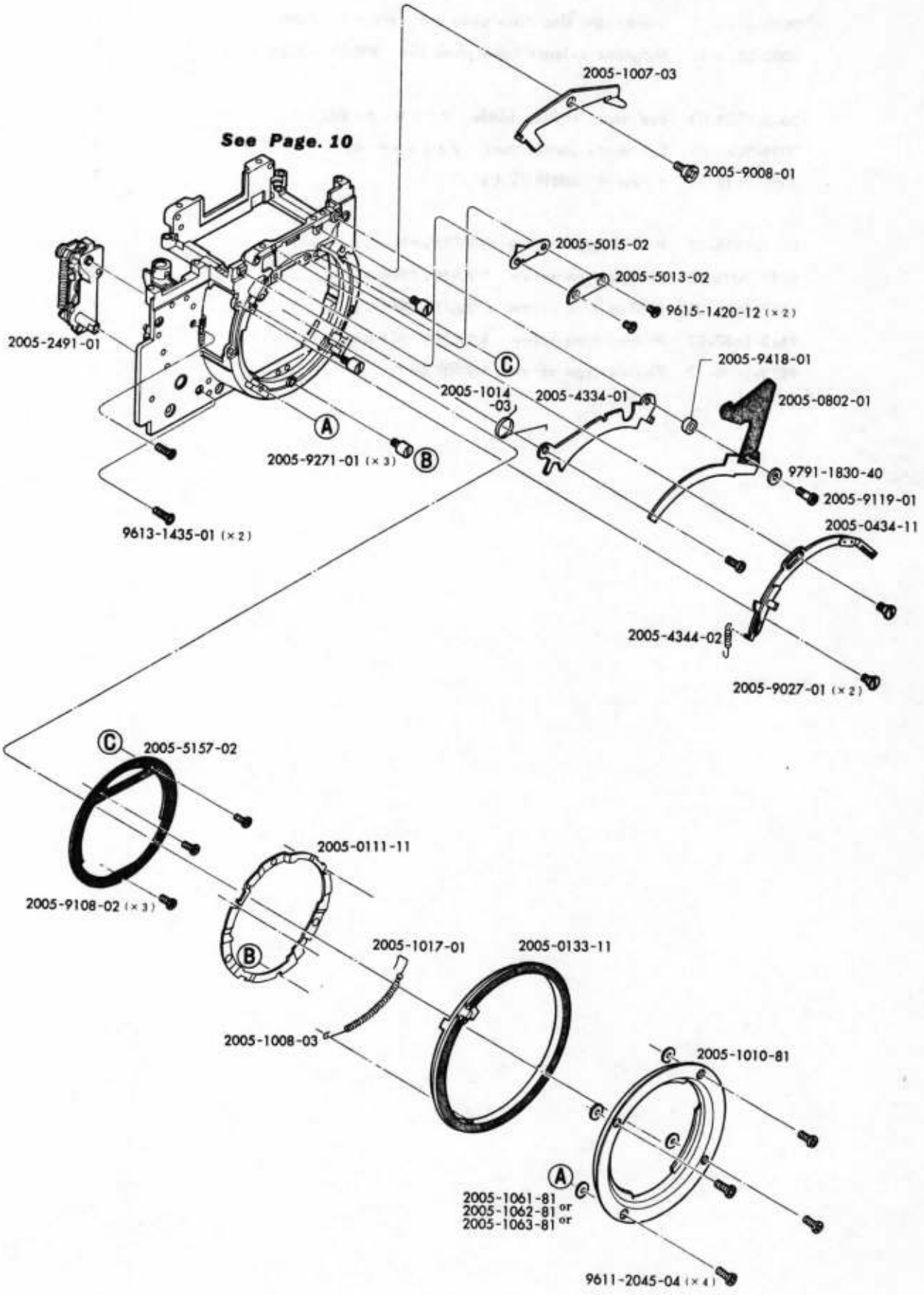
Part No. 部品番号	Part Name 部品名称	Qty 員数
2005-0525-11	Space plate set　ペンタ間隔板セット	1
2005-0538-11	In-finder base plate set　インファインダー台板セット	1
2005-2035-01	String　SS表示紐	1
2005-5035-01	Finder mask　SSファインダーマスク	1
2005-5045-02	Drum-A　SSファインダードラム外筒A	1
2005-5049-01	In-finder spring　SSインファインダーSP	1
2005-5051-02	Drum-B　SSインファインダードラム外筒B	1
2005-5809-01	In-finder lens　絞りインファインダーレンズ	1
2005-5814-01	Plane mirror　絞り表示平面鏡	1
2005-5818-02	S.S figure plate　SS数値帯	1
9612-1420-02	Phillips type screw　十字穴付なべ頭小ねじ	2
2005-0583-11	Penta. prism set　ペンタプリズムセット	1
2005-5029-01	Sponge　ペンタ防じんモルトプレン	1
2005-5033-01	In-finder light shield plate　インファインダー遮光板	1
2005-5811-01	In-finder prism　絞りインファインダープリズム	1
2005-0585-11	Figure change plate set　数値帯切換板セット	1
2005-5024-03	Eye-piece mask lens　接眼マスク	1
2005-5036-01	In-finder mask　絞りインファインダーマスク	1
2005-5043-01	Figure change plate spring　数値帯切換板SP	1
2005-5815-01	Light guide　ライトガイド	1
2005-5816-01	L.E.D diffusion plate　L.E.D散光板	1
9720-0080-00	E-ring　E リング	2

XD-11 (2005-100)
XD- 7 (2005-300)
XD (2005-500)



Part No. 部品番号	Part Name 部品名称	Qty 員数
2005-0523-11	Diaphragm stop base plate set　絞りストップ台板セット	1
2005-0553-11	Magnetic release base plate set　電磁レリーズ台板セット	1
2005-5204-03	Eye-piece shutter blade　アイシャッター羽根	1
2005-9041-01	Eye-piece shutter axis　アイシャッター軸	2
2005-9148-03	Screw-A　前枠押えビスA	2
9611-1616-02	Phillips type screw　十字穴付なべ頭小ねじ	1
9611-2025-02	Phillips type screw　十字穴付なべ頭小ねじ	2
9612-1625-01	Phillips type screw　十字穴付なべ頭小ねじ	2
9612-1667-02	Phillips type screw　十字穴付なべ頭小ねじ	1
9613-1630-02	Phillips type screw　十字穴付皿小ねじ	2

XD-11 (2005-100)
XD- 7 (2005-300)
XD (2005-500)



Part No. 部品番号	Part Name 部品名称	Qty 員数
2005-0111-11	Bayonet spring set　バヨネットスプリングセット	1
2005-0133-11	Aperture coupling ring set　連結リングセット	1
2005-0434-11	MD lever set　MDレバーセット	1
2005-0802-01	Flexible circuit base plate-B set　フレキシブルBセット	1
2005-2491-01	Self gear set　セルフギヤーセット	1
2005-1007-03	Lens lock lever　レンズロックレバー	1
2005-1008-03	MC ring return spring　MCリング戻しSP	1
2005-1010-81	Bayonet lens mount　バヨネット座板	1
2005-1014-03	Lens lock lever spring　レンズロックレバーばね	1
2005-1017-01	Return spring hanger　MC戻しSPかけ	1
2005-1061-81	Adjustment washer-A t=0.02　座板調整用ワッシャーA	Some 若干
2005-1062-81	Adjustment washer-B t=0.05　座板調整用ワッシャーB	Some 若干
2005-1063-81	Adjustment washer-C t=0.1　座板調整用ワッシャーC	Some 若干
2005-4334-01	AV resistor holder　絞り抵抗体保持板	1
2005-4344-02	MD lever return spring　MDレバー戻しSP	1
2005-5013-02	Fresnel lens hold plate　焦点板支え板	1
2005-5015-02	Fresnel lens hold spring　焦点板支えばね	1
2005-5157-02	Front flare shield plate　前部フレアー防止板	1
2005-9008-01	Lock lever axis　ロックレバー軸	1
2005-9027-01	MD lever guide axis　MDレバーガイド軸	2
2005-9108-02	Flare shield plate set screw　フレア防止板止めビス	3
2005-9119-01	Flexible circuit base plate set screw　フレキシブル取付けビス	1
2005-9271-01	Bayonet spring screw　バヨネットSP位置決めねじ	3
2005-9418-01	Collar　フレキシブル留めカラー	1
9611-2045-04	Phillips type screw　十字穴付なべ頭小ねじ	4
9613-1435-01	Phillips type screw　十字穴付皿小ねじ	2
9615-1420-12	Phillips type screw　十字穴付皿小ねじ	2
9791-1830-40	Washer　薄ワッシャー	1

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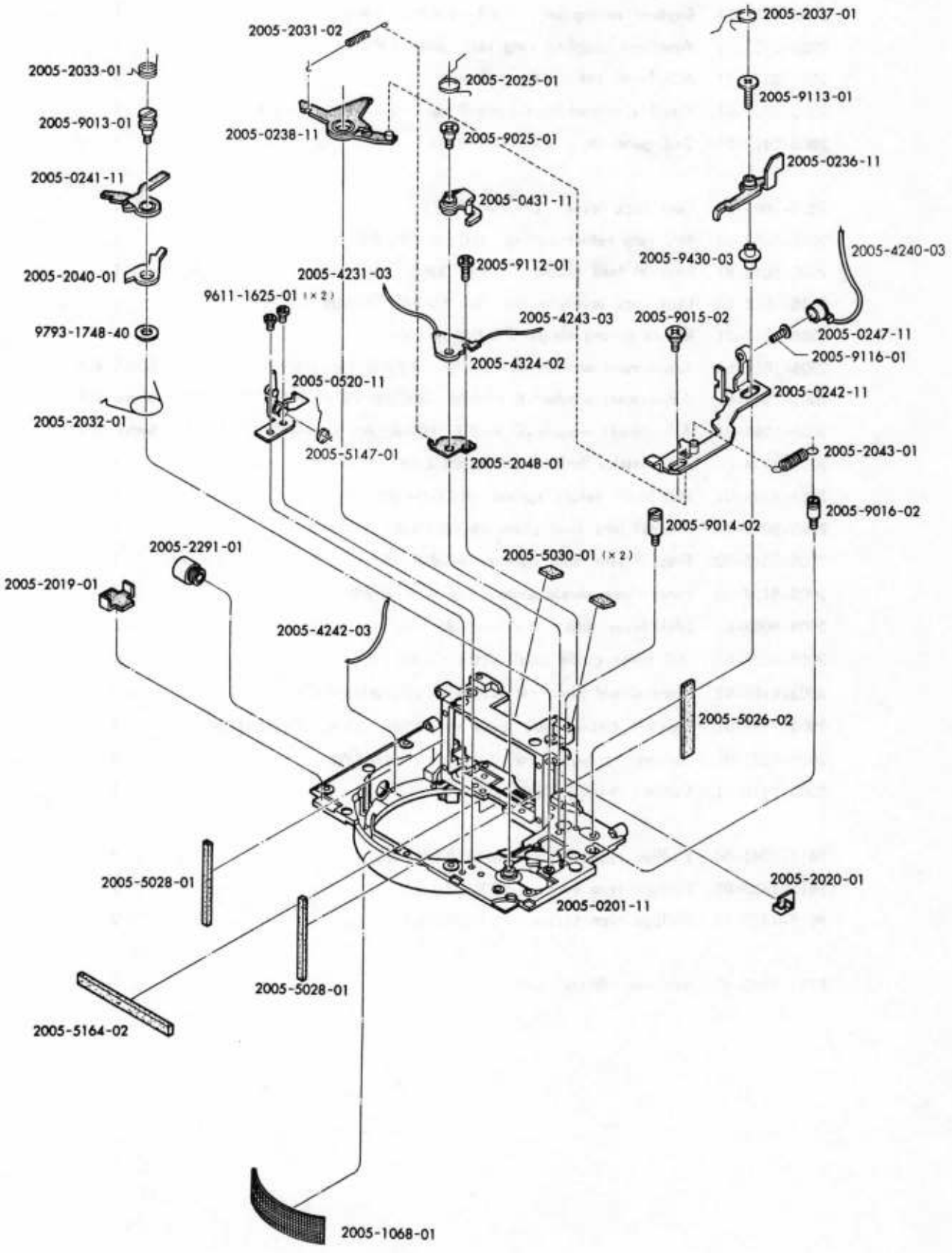
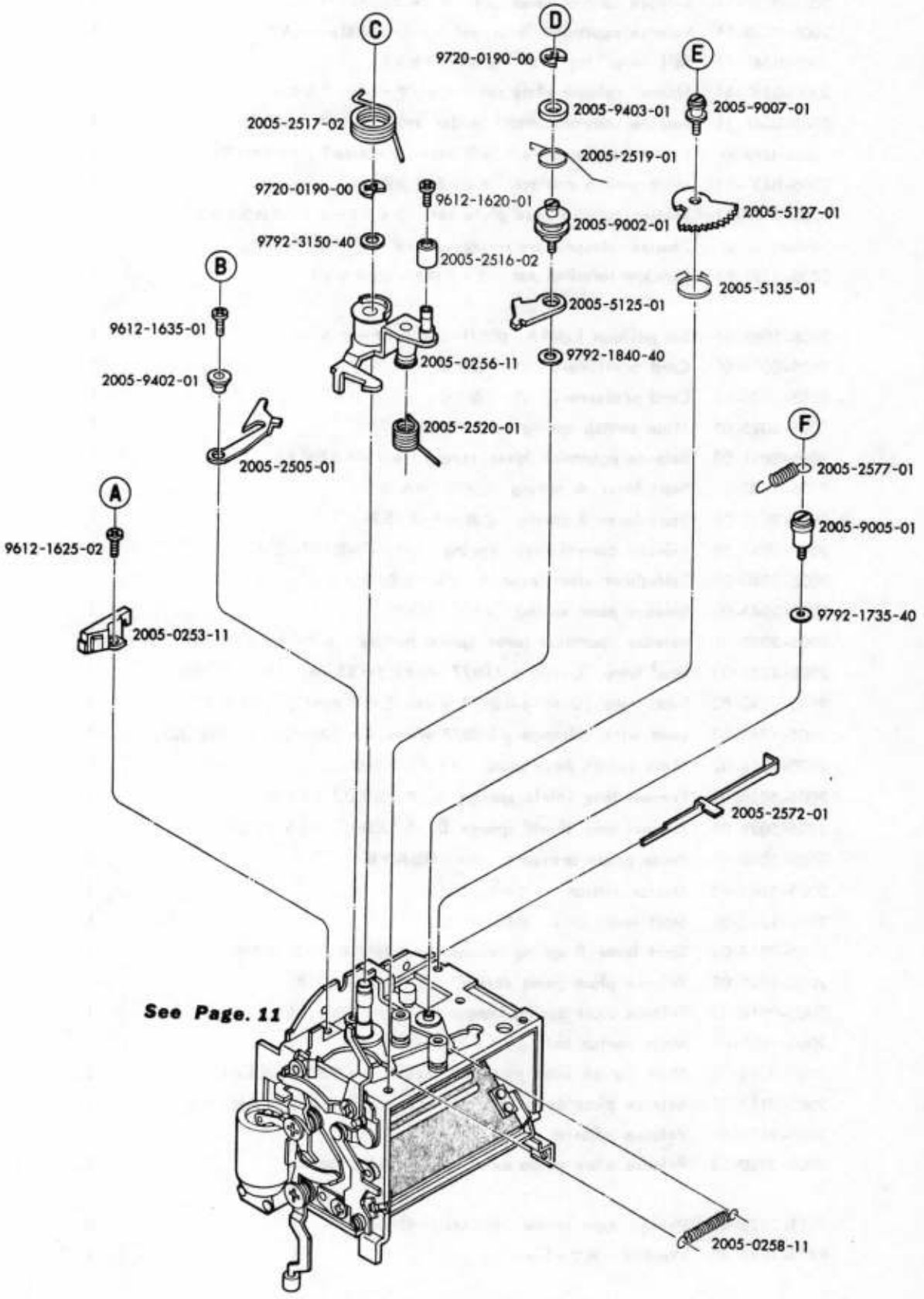
XD- 7 (2005-300)
XD (2005-500)



Part No. 部品番号	Part Name 部品名称	Qty 員数
2005-0201-11	Front base plate set　前枠セット	1
2005-0236-11	Release control lever set　レリーズ制御レバーセット	1
2005-0238-11	Release operation lever set　レリーズ連結レバーAセット	1
2005-0241-11	Self lever set　セルフ始動レバーセット	1
2005-0242-11	Shutter release plate set　シャッターレリーズ板セット	1
2005-0247-11	Remote-control contact holder set　外部レリーズ接片ホルダーセット	1
2005-4240-03	Lead-wire (Orange ϕ 0.08/7 wires, ℓ=90mm)　コード20 (橙)	1
2005-0431-11	Main switch contact　メインSW.接片セット	1
2005-0520-11	Shutter release base plate set　シャッターレリーズ台板セット	1
2005-5147-01	Shutter release lever spring　シャッターレリーズレバーSP	1
2005-2291-01	Synchro terminal set　シンクロターミナルセット	1
2005-1068-01	Set position tape-A　前カバー位置決めテープ-A	1
2005-2019-01	Cord pressure-B　コード押えB	1
2005-2020-01	Cord pressure-C　コード押えC	1
2005-2025-01	Main switch spring　メインSW.SP	1
2005-2031-02	Release operation lever spring　レリーズ連結板SP	1
2005-2032-01	Start lever A spring　始動レバーA SP	1
2005-2033-01	Start lever B spring　始動レバーB SP	1
2005-2037-01	Release control lever spring　レリーズ制御レバーSP	1
2005-2040-01	Self-timer start lever A　セルフ始動レバーA	1
2005-2043-01	Release plate spring　レリーズ板SP	1
2005-2048-01	Release operation lever spring hanger　レリーズ連結SP掛け	1
2005-4231-03	Lead wire (Green ϕ 0.08/7 wires, ℓ=85mm)　コード11 (緑)	1
2005-4242-03	Lead wire (Grey ϕ 0.08/7 wires, ℓ=80mm)　コード22 (灰)	1
2005-4243-03	Lead wire (Orange ϕ 0.08/7 wires, ℓ=20mm)　コード23 (橙)	1
2005-4324-02	Main switch base plate　メインSW.基板	1
2005-5026-02	Fresnel lens shield sponge A　焦点板防じんモルトプレンA	1
2005-5028-01	Fresnel lens shield sponge D　焦点板防じんモルトプレンD	2
2005-5030-01	Penta. prism pressure　ペンタ前面押え板	2
2005-5164-02	Mirror cusion　ミラークッション	1
2005-9013-01	Start lever axis　始動レバー軸	1
2005-9014-02	Start lever B spring hanger　セルフ始動レバーB SP掛け	1
2005-9015-02	Release plate guide screw　レリーズ板ガイドビス	1
2005-9016-02	Release plate spring hanger A　レリーズ板SP掛けA	1
2005-9025-01	Main switch axis　メインスイッチ軸	1
2005-9112-01	Main switch base plate set screw　メインSW.基板止めビス	1
2005-9113-01	Release plate guide axis set screw　レリーズ板ガイド軸止めビス	1
2005-9116-01	Release adjuster　レリーズ中間調整ねじ	1
2005-9430-03	Release plate guide axis　レリーズ板ガイド軸	1
9611-1625-01	Phillips type screw　十字穴付なべ頭小ねじ	2
9793-1748-40	Washer　薄ワッシャー	1

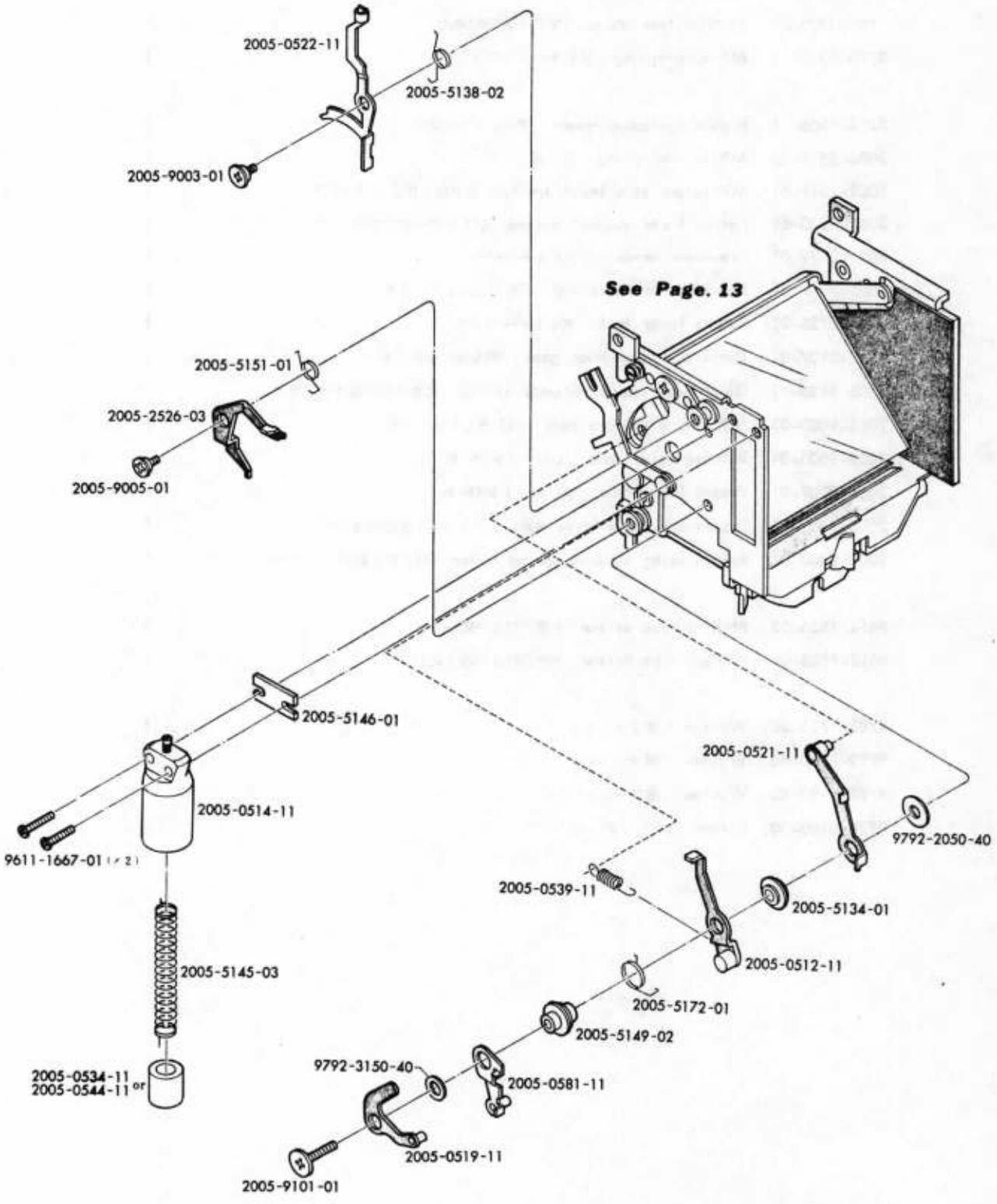
XD-11 (2005-100)
XD- 7 (2005-300)
XD (2005-500)



See Page. 11

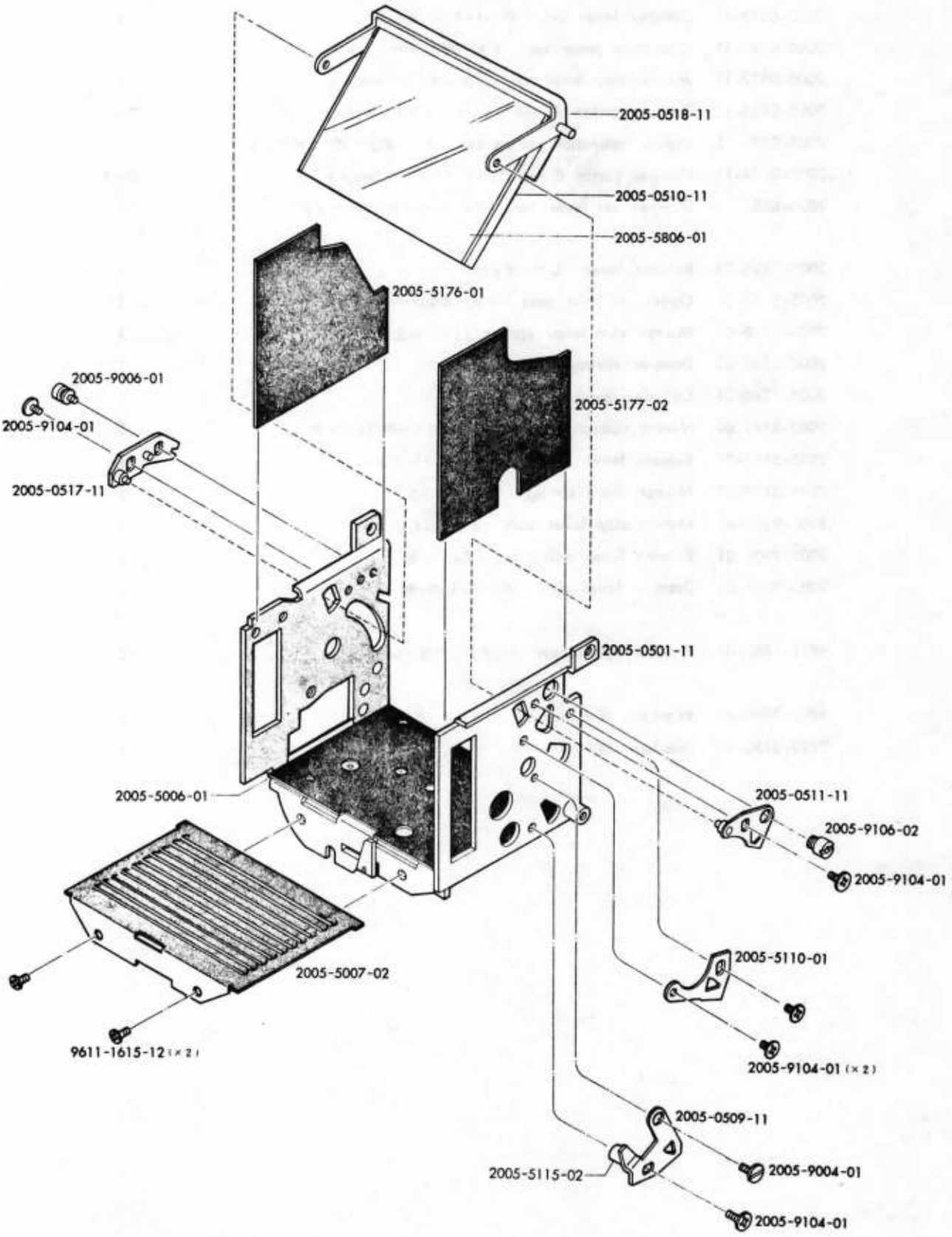
Part No. 部品番号	Part Name 部品名称	Qty 員数
2005-0253-11	Pre-view lever guide set　プレビューレバーガイドセット	1
2005-0256-11	MP return lever set　MP戻しレバーセット	1
2005-2516-02	MP charge roller　MPチャージローラー	1
9612-1620-01	Phillips type screw　十字穴付なべ頭小ねじ	1
2005-0258-11	MP loop spring　MPループスプリング	1
2005-2505-01	Preset operation lever　プリセット連動桿	1
2005-2517-02	MP return spring　MP戻しSP	1
2005-2519-01	MP return stop lever spring　MP戻し係止レバーSP	1
2005-2520-01	Return lever support spring　戻しレバー補助SP	1
2005-2572-01	Pre-view lever　プレビューレバー	1
2005-2577-01	Pre-view lever spring　プレビューレバーSP	1
2005-5125-01	Return lever lock　戻しレバーロック	1
2005-5127-01	Diaphragm operation gear　絞り連動扇形ギヤー	1
2005-5135-01	Diaphragm operation gear spring　絞り連動扇形ギヤーSP	1
2005-9002-01	MP return release axis　MP戻しレリーズ軸	1
2005-9005-01	Release lever axis　レリーズレバー軸	1
2005-9007-01	Preset lever axis　プリセットレバー軸	1
2005-9402-01	Preset operation lever axis　プリセット連結桿軸	1
2005-9403-01	Return lever support spring roller　MP戻し補助SPローラー	1
9612-1625-02	Phillips type screw　十字穴付なべ頭小ねじ	1
9612-1635-01	Phillips type screw　十字穴付なべ頭小ねじ	1
9792-1735-40	Washer　薄ワッシャー	1
9792-1840-40	Washer　薄ワッシャー	1
9792-3150-40	Washer　薄ワッシャー	1
9720-0190-00	E-ring　E-リング	2

XD-11 (2005-100)
XD- 7 (2005-300)
XD (2005-500)



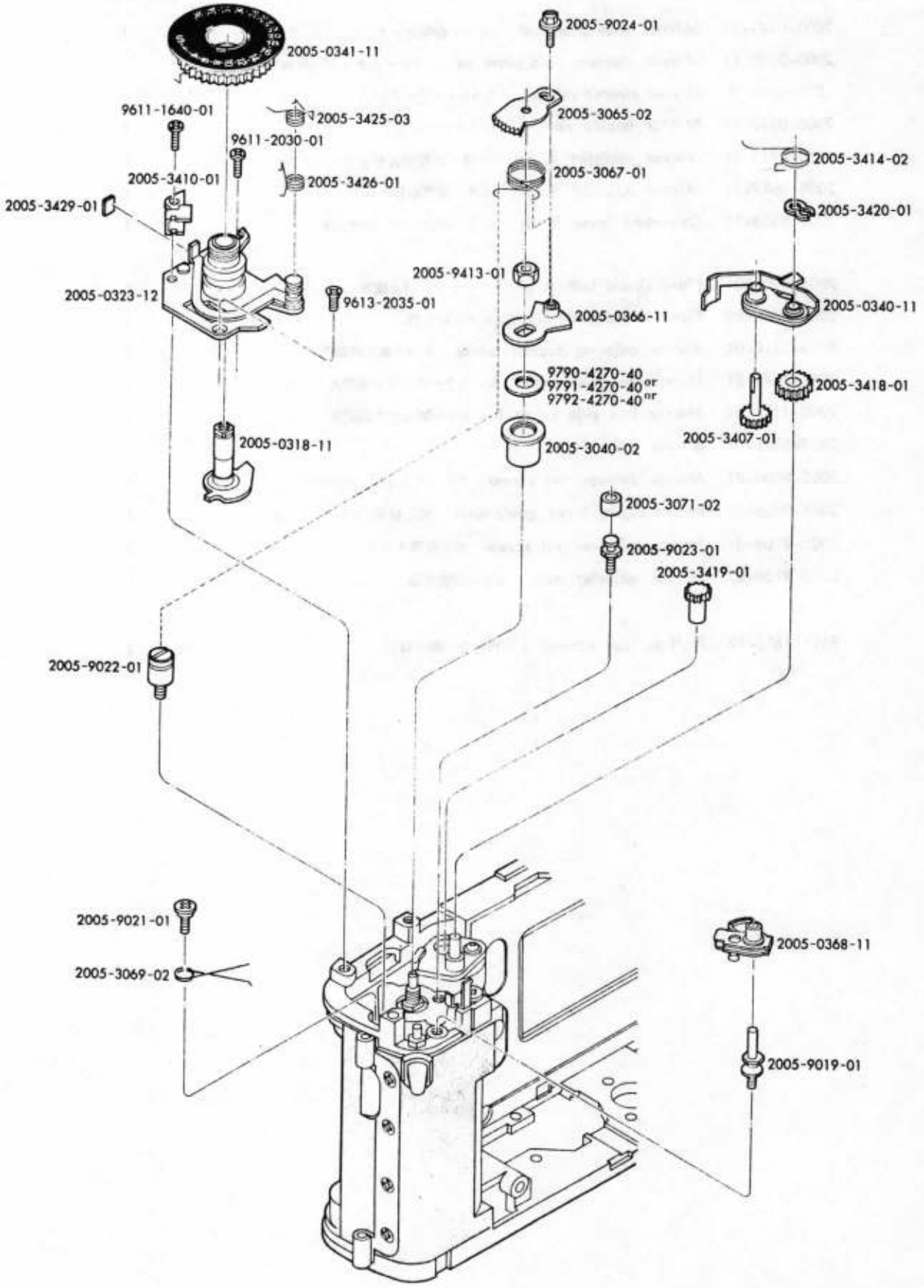
Part No. 部品番号	Part Name 部品名称	Qty 員数
2005-0512-11	Mirror operation lever set ミラー駆動レバーセット	1
2005-0514-11	Air damper cylinder set エアーダンパーシリンダーセット	1
2005-0519-11	Damper lever set ダンパーレバーセット	1
2005-0521-11	Operation lever set ミラー操作レバーセット	1
2005-0522-11	Mirror stop lever set ミラー係止レバーセット	1
2005-0534-11	Damper piston A set ダンパーピストンAセット	0～1
2005-0539-11	Mirror operation spring set ミラー駆動スプリングセット	1
2005-0544-11	Damper piston B set ダンパーピストンBセット	0～1
2005-0581-11	Damper set lever set ダンパーセットレバーセット	1
2005-2526-03	Release lever レリーズレバー	1
2005-5134-01	Operation lever axis ミラー操作レバー軸	1
2005-5138-02	Mirror stop lever spring ミラー係止レバーSP	1
2005-5145-03	Damper spring ダンパーSP	1
2005-5146-01	Cylinder base シリンダー敷板	1
2005-5149-02	Mirror operation lever axis ミラー駆動レバー軸	1
2005-5151-01	Release lever spring レリーズレバーSP	1
2005-5172-01	Mirror down spring ミラーダウンSP	1
2005-9003-01	Mirror stop lever axis ミラー係止レバー軸	1
2005-9005-01	Release lever axis レリーズレバー軸	1
2005-9101-01	Damper lever axis ダンパーレバー軸	1
9611-1667-01	Phillips type screw 十字穴付なべ頭小ねじ	2
9792-2050-40	Washer 薄ワッシャー	1
9792-3150-40	Washer 薄ワッシャー	1

XD-11 (2005-100)
XD- 7 (2005-300)
XD (2005-500)



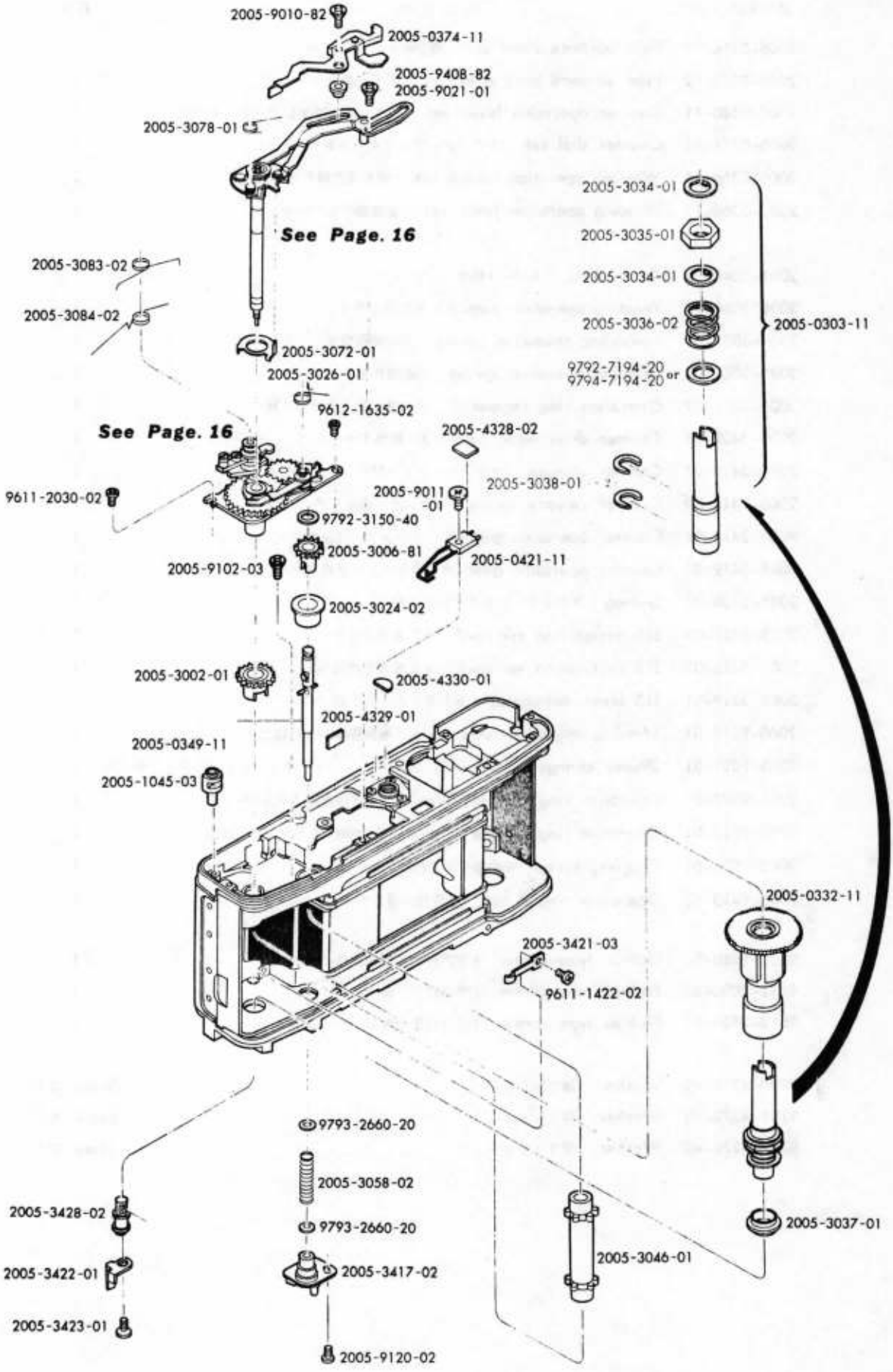
Part No. 部品番号	Part Name 部品名称	Qty 員数
2005-0501-11	Mirror base plate set ミラー台板セット	1
2005-0509-11	Mirror stopper hold plate set ミラーストッパー保持板セット	1
2005-5115-02	Mirror stopper rubber ミラーストッパーゴム	1
2005-0510-11	Mirror holder set ミラーホルダーセット	1
2005-0511-11	Mirror adjuster A set ミラー調整板Aセット	1
2005-0517-11	Mirror adjuster B set ミラー調整板Bセット	1
2005-0518-11	Operation lever B set ミラー操作レバーBセット	1
2005-5006-01	Flare shield bottom plate フレアー防止底板	1
2005-5007-02	Flare shield plate 下部フレアー防止板	1
2005-5110-01	Mirror adjuster support plate ミラー調整補助板	1
2005-5176-01	Mirror box side cover A ミラーボックス側壁A	1
2005-5177-02	Mirror box side cover B ミラーボックス側壁B	1
2005-5806-01	Mirror ミラー	1
2005-9004-01	Mirror stopper set screw ミラーストッパー止めビス	1
2005-9006-01	Return signal lever guide axis 戻し信号レバーガイド軸	1
2005-9104-01	Mirror adjuster set screw 調整板押えビス	5
2005-9106-02	Mirror adjuster axis ミラー調整板軸	1
9611-1615-12	Phillips type screw 十字穴付なべ頭小ねじ	2

XD-11 (2005-100)
XD- 7 (2005-300)
XD (2005-500)



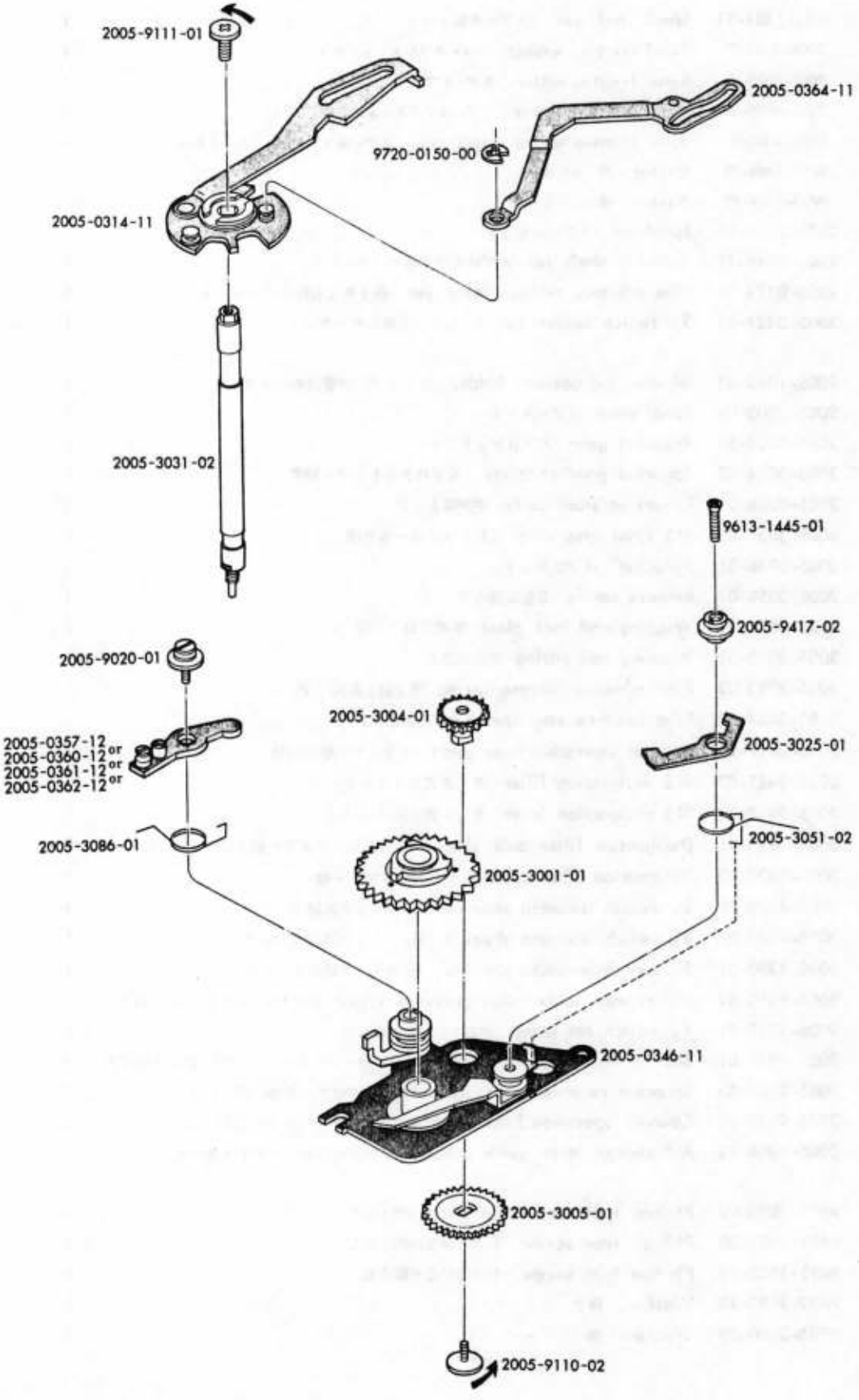
Part No. 部品番号	Part Name 部品名称	Qty 員数
2005-0318-11	Film advance shaft set 巻上軸セット	1
2005-0323-12	Film advance base plate set 巻上台板セット	1
2005-0340-11	Counter operation lever set カウンター操作レバーセット	1
2005-0341-11	Counter dial set カウンターダイヤルセット	1
2005-0366-11	Winding operation ring-B set 巻取操作環Bセット	1
2005-0368-11	Winding operation lever set 巻取操作レバーセット	1
2005-3040-02	Spool shaft スプール軸受	1
2005-3065-02	Winding operation ring-A 巻取操作環A	1
2005-3067-01	Rewinding operation spring 巻取操作環戻しSP	1
2005-3069-02	Winding operation spring 巻取操作SP	1
2005-3071-02	Operation ring stopper-B 巻取操作環ストッパーB	1
2005-3407-01	Counter drive gear カウンター駆動ギヤー	1
2005-3410-01	Counter stopper カウンターストッパー	1
2005-3414-02	Counter release spring カウンター解除SP	1
2005-3418-01	Counter operation gear-B カウンター伝達ギヤー	1
2005-3419-01	Counter operation gear-A カウンター連結ギヤー	1
2005-3420-01	G-ring カウンター送りギヤー止め輪	1
2005-3425-03	SLS designation spring-A SLS表示SP	1
2005-3426-01	SLS designation spring-B SLS表示補助SP	1
2005-3429-01	SLS lever designator SLSレバー表示紙	1
2005-9019-01	Winding operation lever axis 巻取操作レバー軸ビス	1
2005-9021-01	Shutter charge lever guide axis シャッターチャージレバーガイド軸ビス	1
2005-9022-01	Operation ring stopper-A axis 巻取操作環ストッパーA軸	1
2005-9023-01	Operation ring stopper-B axis 巻取操作環ストッパーB軸	1
2005-9024-01	Coupling screw 巻取操作環連結ビス	1
2005-9413-01	Operation ring-B nut 巻取操作環Bナット	1
9611-1640-01	Phillips type screw 十字穴付なべ頭小ねじ	1
9611-2030-01	Phillips type screw 十字穴付なべ頭小ねじ	1
9613-2035-01	Phillips type screw 十字穴付皿小ねじ	1
9790-4270-40	Washer 薄ワッシャー	Some 若干
9791-4270-40	Washer 薄ワッシャー	Some 若干
9792-4270-40	Washer 薄ワッシャー	Some 若干

XD-11 (2005-100)
XD- 7 (2005-300)
XD (2005-500)



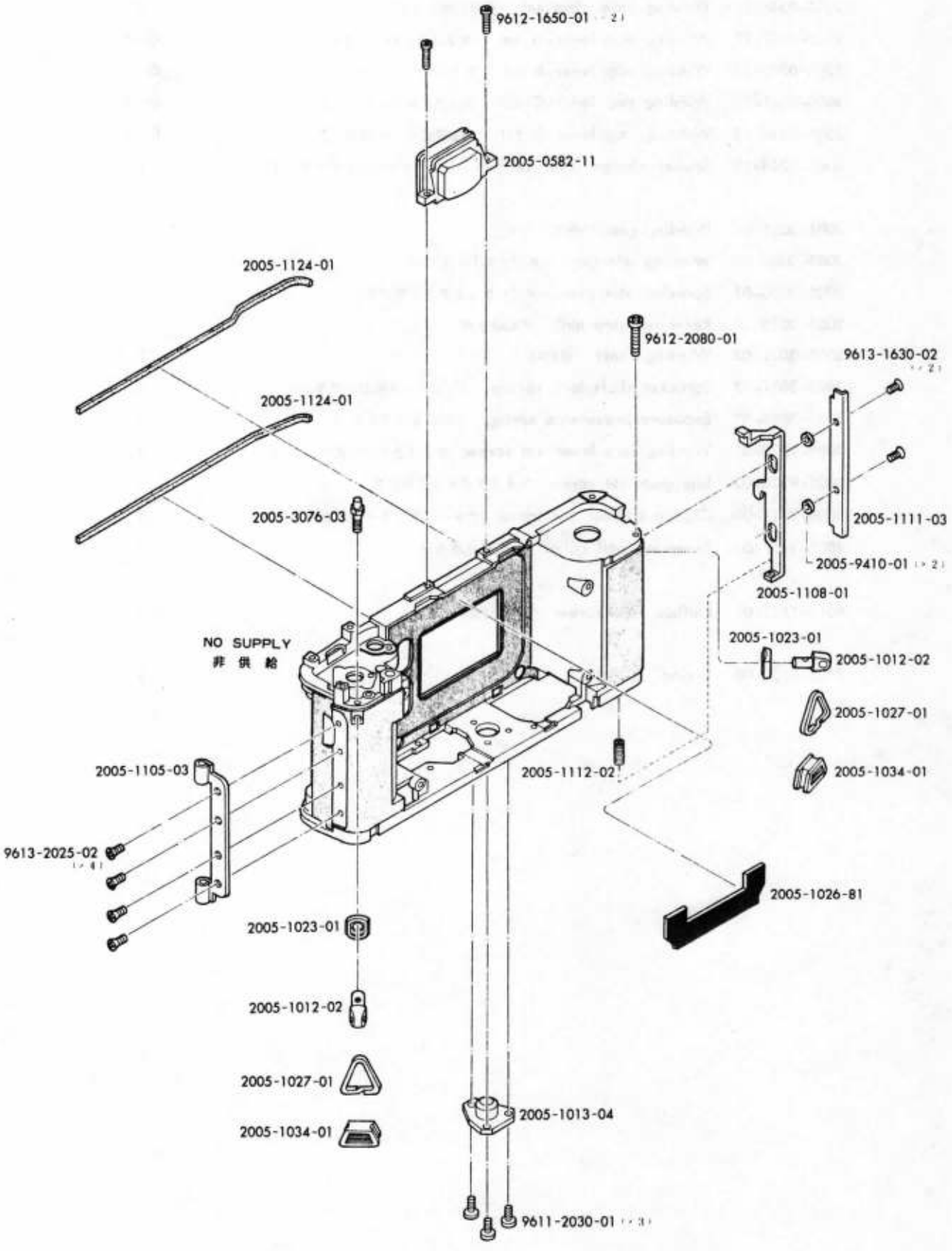
Part No. 部品番号	Part Name 部品名称	Qty 員数
2005-0303-11	Spool shaft set スプール軸セット	1
2005-3034-01	Spool friction washer スプールフリクションワッシャー	2
2005-3035-01	Spool friction collar スプールフリクションカラー	1
2005-3036-02	Spool friction spring スプールフリクションSP	1
2005-3038-01	Spool friction spring stoper ring スプールフリクションSP止め輪	2
9792-7194-20	Washer 薄ワッシャー	0~1
9794-7194-20	Washer 薄ワッシャー	0~1
2005-0332-11	Spool set スプールセット	1
2005-0349-11	Sprocket shaft set スプロケット軸セット	1
2005-0374-11	Film advance release lever set 巻上係止解除レバーセット	1
2005-0421-11	S_1 switch holder set S_1スイッチホルダーセット	1
2005-1045-03	Winder set position holder ワインダー位置決めホルダー	1
2005-3002-01	Spool gear スプールギヤー	1
2005-3006-81	Sprocket gear スプロケットギヤー	1
2005-3024-02	Sprocket gear receiver スプロケットギヤー軸受	1
2005-3026-01	Reversing stop spring 逆転防止SP	1
2005-3037-01	SLS filler stop ring SLSフィラー当り環	1
2005-3046-01	Sprocket スプロケット	1
2005-3058-02	Release spring R釦解除SP	1
2005-3072-01	Winding nail lock plate 巻取爪ロック板	1
2005-3078-01	Winding nail spring 巻取爪SP	1
2005-3083-02	Film advance release spring 巻上係止解除SP	1
2005-3084-02	Film advance stop spring 巻上係止SP	1
2005-3417-02	Counter operation base plate カウンター駆動台板	1
2005-3421-03	SLS designation filler SLS表示フィーラー	1
2005-3422-01	SLS designation lever SLS表示補助レバー	1
2005-3423-01	Designation filler axis sleeve SLS表示フィラー軸スリーブ	1
2005-3428-02	Designation filler axis SLS表示フィラー軸	1
2005-4328-02	S_1 switch isolation sheet-A S_1スイッチ絶縁シートA	1
2005-4329-01	S_1 switch isolation sheet-B S_1スイッチ絶縁シートB	1
2005-4330-01	S_1 switch isolation sheet-C S_1スイッチ絶縁シートC	1
2005-9010-82	MP charge guide collar pressure screw MPチャージガイドカラー押えビス	1
2005-9011-01	S_1 switch set screw S_1スイッチ止めビス	1
2005-9021-01	Shutter charge guide axis screw シャッターチャージレバーガイド軸ビス	1
2005-9102-03	Sprocket receiver pressure screw スプロケット軸受押えビス	1
2005-9120-02	Counter operation base plate set screw カウンター駆動台板止めビス	1
2005-9408-82	MP charge lever guide collar MPチャージレバーガイドカラー	1
9611-2030-02	Phillips type screw 十字穴付なべ頭小ねじ	1
9611-1422-02	Phillips type screw 十字穴付なべ頭小ねじ	1
9612-1635-02	Phillips type screw 十字穴付なべ頭小ねじ	1
9792-3150-40	Washer 薄ワッシャー	1
9793-2660-20	Washer 薄ワッシャー	2

XD-11 (2005-100)
XD- 7 (2005-300)
XD (2005-500)

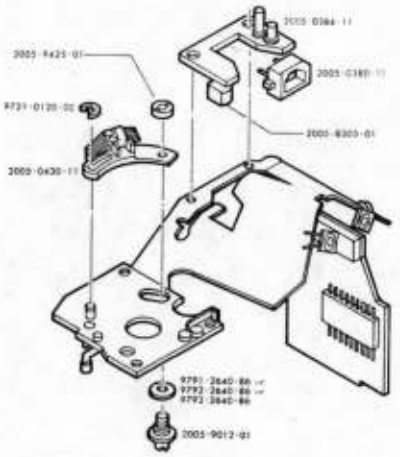


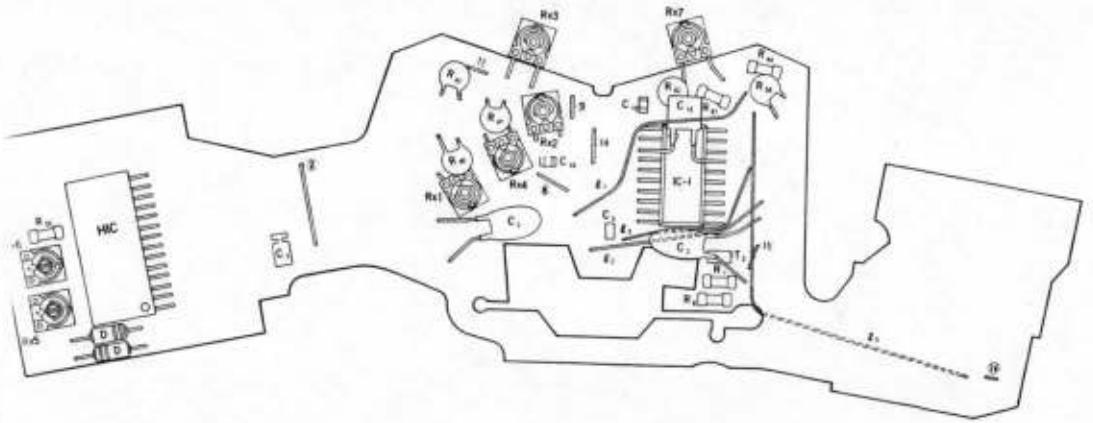
Part No. 部品番号	Part Name 部品名称	Qty 員数
2005-0314-11	Charge coupler set チャージカプラーセット	1
2005-0346-11	Winding base plate set 巻取台板セット	1
2005-0357-12	Winding stop lever-A set 巻上係止レバーAセット	0～1
2005-0360-12	Winding stop lever-B set 巻上係止レバーBセット	0～1
2005-0361-12	Winding stop lever-C set 巻上係止レバーCセット	0～1
2005-0362-12	Winding stop lever-D set 巻上係止レバーDセット	0～1
2005-0364-11	Shutter charge lever set シャッターチャージレバーセット	1
2005-3001-01	Winding gear 巻取ギヤー	1
2005-3004-01	Winding idle gear 巻取アイドルギヤー	1
2005-3005-01	Sprocket idle gear スプロケットアイドルギヤー	1
2005-3025-01	Reversing stop nail 逆転防止爪	1
2005-3031-02	Winding shaft 巻取軸	1
2005-3051-02	Sprocket shaft lock spring スプロケット軸ロックSP	1
2005-3086-01	Exposure prevension spring 不時露光防止SP	1
2005-9020-01	Winding stop lever set screw 巻上係止レバー止めビス	1
2005-9110-02	Idle gear set screw アイドルギヤー止めビス	1
2005-9111-01	Charge coupler set screw チャージカプラー止めビス	1
2005-9417-02	Reversing nail collar 逆転防止爪カラー	1
9613-1445-01	Phillips type screw 十字穴付皿小ねじ	1
9720-0150-00	E-ring E-リング	1

XD-11 (2005-100)
XD- 7 (2005-300)
XD (2005-500)



Part No. 部品番号	Part Name 部品名称	Qty 員数
2005-0582-11	Eye-piece lens frame set 接眼枠セット	1
2005-1012-02	Strap hanger 吊環	2
2005-1013-04	Tripod socket 三脚ねじ	1
2005-1023-01	Strap hanger seat 吊環座	2
2005-1026-81	Light shield sheet ボデー遮光シート	1
2005-1027-01	Strap hanger ring 三角吊環	2
2005-1034-01	Strap hanger ring stopper 三角環回り止め	2
2005-1105-03	Hinge ボデー側ヒンジ	1
2005-1108-01	Back cover lock 裏ぶたロック	1
2005-1111-03	Lock cover 裏ぶたロックカバー	1
2005-1112-02	Lock spring 裏ぶたロックSP	1
2005-1124-01	Light shield sponge-A ボデー上溝遮光パッキンA	2
2005-3076-03	Winding operation lever stopper 巻取り操作レバーストッパー	1
2005-9410-01	Lock guide ring ロックガイドリング	2
9611-2030-01	Phillips type screw 十字穴付なべ頭小ねじ	3
9612-1650-01	Phillips type screw 十字穴付なべ頭小ねじ	2
9612-2080-01	Phillips type screw 十字穴付なべ頭小ねじ	1
9613-1630-02	Phillips type screw 十字穴付皿小ねじ	2
9613-2025-02	Phillips type screw 十字穴付皿小ねじ	4

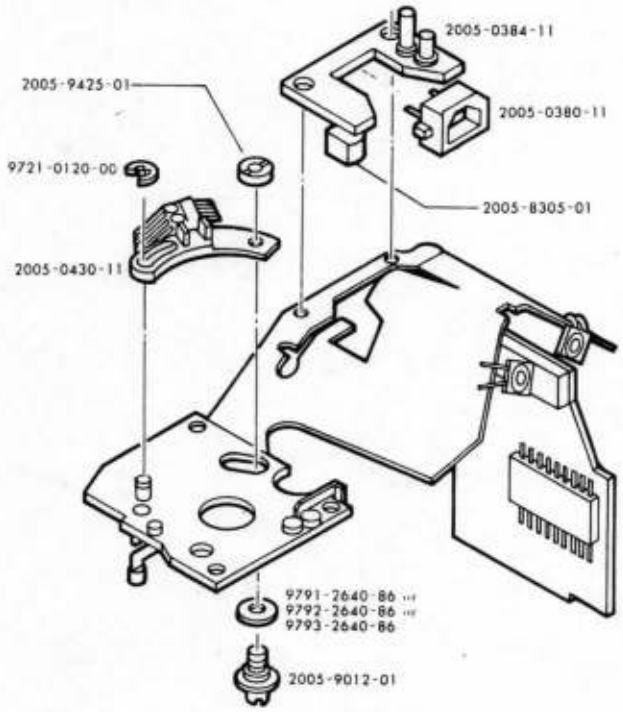


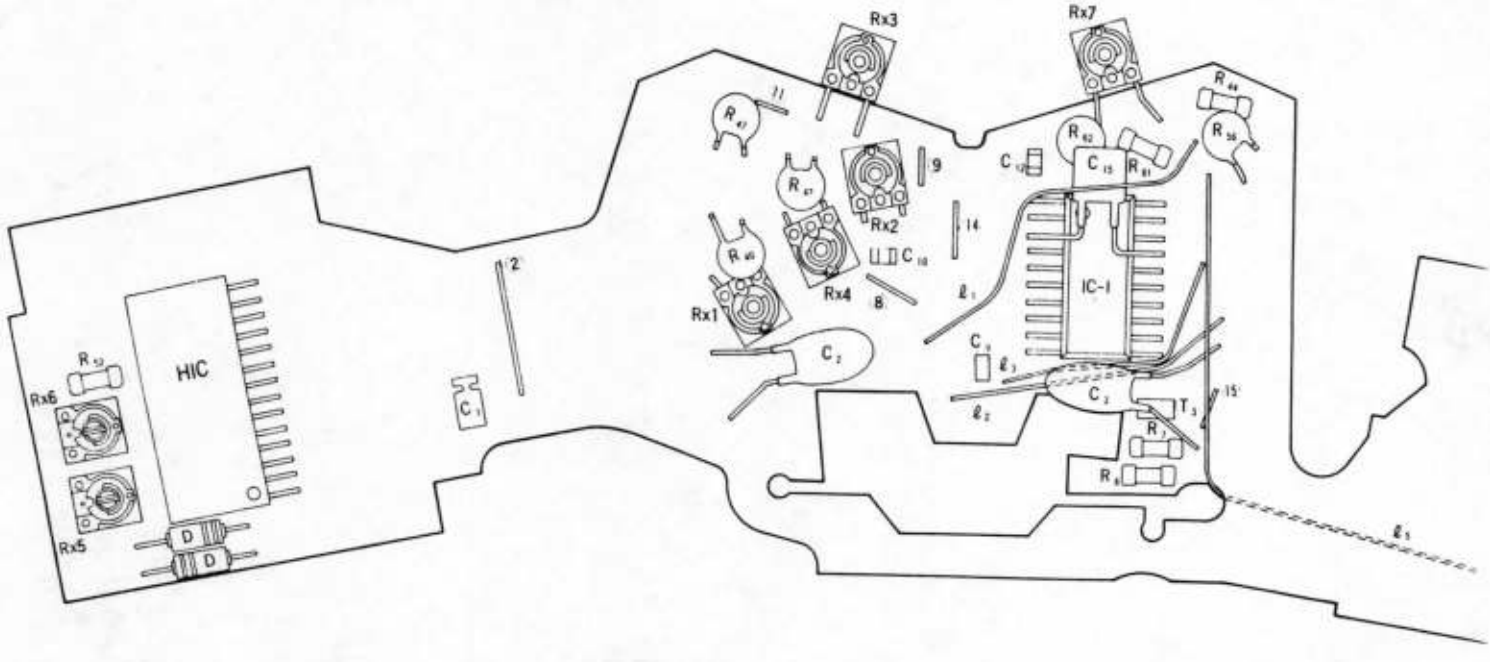


Assy. Part No. 2005-0841-03 Assy. Part Name Frexible circuit base plate-A set

Simbol	Part No.	Com.	Part Name	Typ.	Qty.
IC-1	2005-4393-02		I.C		1
HIC	2005-8307-01				1
T	9363-1632-02		Transistor		1
D	9361-1631-11		Diode		2
R1	9422-1826-61		Fixed resistor	1/8W RD4BB 1.6KΩ	1
R2	9422-1526-61			1/8W RD4BB 1.5KΩ	1
R3	9431-2247-61			1/8W MR 329KΩ	1
R4	9431-3347-61			1/8W MR 330KΩ	1
R5 R6	9422-1046-61			1/8W RD4BB 390KΩ	2
R7	9431-2726-31			1/8W MR 2.7KΩ	1
R8	9422-2726-61			1/8W RD4BB 2.7KΩ	0~1
	9422-4326-61			1/8W RD4BB 4.3KΩ	0~1
	9422-1526-61			1/8W RD4BB 1.5KΩ	0~1
	9422-2226-61			1/8W RD4BB 2.2KΩ	0~1
	9422-6816-61			1/8W RD4BB 680Ω	0~1
	9422-3326-61			1/8W RD4BB 3.3KΩ	0~1
	9422-3926-61			1/8W RD4BB 3.9KΩ	0~1
R9	9431-7547-31			1/8W MR 750KΩ	1
R10	9431-1057-31			1/8W MR 1MΩ	1
RV1 RV2	9473-3329-61		Variable resistor	RG4-HAS 3.3KΩ	2
RV3	9473-1059-61			RG4-HAS 10Ω	1
RV4	9473-3339-61			RG4-HAS 33KΩ	1
RV5	9473-2239-62			RG4-HAS 22KΩ	1
RV6	9473-4729-62			RG4-HAS 4.7KΩ	1
RV7	9473-1529-61			RG4-HAS 1.5KΩ	1
C1	9535-1045-61		Condenser	0.1μF/35V	1
C2	2005-8362-02			1.5μF/35V	1
C3	9535-4744-36			0.47μF/35V	1
C4	9564-2238-61			CM-21 0.022μF	1
C5	9564-1028-61			CM-21 1000PF	1
C6	9564-2228-61			CM-21 2200PF	1
C7	9565-4728-61			0.0047μF/50V 4700PF	1
d1	2005-4221-03		Lead wire Green	φ0.08/7 wires ℓ=35mm	1
d2	2005-4222-04		Black	φ0.08/7 wires ℓ=20mm	1
d3	2005-4223-04		Brown	φ0.08/7 wires ℓ=30mm	1
d4	2005-4225-03		Blue	φ0.08/7 wires ℓ=50mm	1
E	2005-4263-01		Jamp lead	φ0.4 ℓ=12mm	1
E1 E2	2005-4269-01			φ0.4 ℓ=4mm	2
E3 E4	2005-4270-01			φ0.4 ℓ=5mm	2
E5	2005-4275-01			φ0.4 ℓ=5mm	1
E6	2005-4277-01			φ0.4 ℓ=7mm	1

Part No.	Part Name	Qty
2005-0380-11	SPC holder set	1
2005-0384-11	Circuit base plate-A set	1
2005-8305-0	Field effect transistor FET	1
2005-0430-11	Mode change switch holder set	1
2005-9012-01	Mode change switch holder guide axis B	1
2005-9425-01	S.S infinder signal boss	1
9721-0120-00	E-ring	1
9791-2640-86	Washer	Some
9792-2640-86	Washer	Some
9793-2640-86	Washer	Some


2005-0384-11
2005-9425-01
2005-0380-11
9721-0120-00
2005-8305-01
2005-0430-11
9791-2640-86
9792-2640-86
9793-2640-86
2005-9012-01

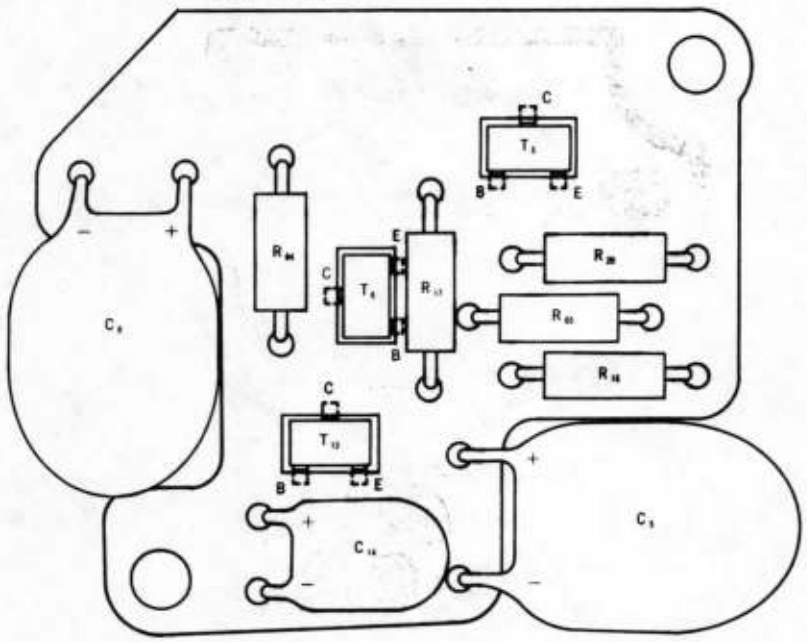

Rx3
Rx7
Rx2
Rx4
Rx1
Rx6
Rx5
HIC
IC-1
D
D

Assy. Part No. 2005-0841-03 Assy. Part Name Frexible circuit base plate-A set
フレキシブルAセット

Simbol	Part No.	Com.	Part Name	Typ.	Qty.
IC-1	2005-4393-02		I.C		1
HIC	2005-8307-01				1
T_1	9363-1632-02	03, 04	Transistor	M6 or M5	1
D	9361-1631-11		Diode	1S953	2
R_a	9422-1826-61		Fixed resistor	1/8W, RD40B 1.8KΩ	1
R_1	9422-1526-61			1/8W, RD40B 1.5KΩ	1
R_m	9431-2247-61			1/8W, MR 220KΩ	1
R_{el}	9431-3347-61			1/8W, MR 330KΩ	1
R_{ia} R_{ie}	9422-1046-61			1/8W, RD40B 100KΩ	2
R_{if}	9431-2726-31			1/8W, MR 2.7KΩ	1
R_{ig}	9422-2726-61			1/8W, RD40B 2.7KΩ	0~1
	9422-4326-61			1/8W, RD40B 4.3KΩ	0~1
	9422-1526-61			1/8W, RD40B 1.5KΩ	0~1
	9422-2226-61			1/8W, RD40B 2.2KΩ	0~1
	9422-6816-61			1/8W, RD40B 680Ω	0~1
	9422-3326-61			1/8W, RD40B 3.3KΩ	0~1
	9422-3926-61			1/8W, RD40B 3.9KΩ	0~1
R_{ik}	9431-7547-31			1/8W, MR 750KΩ	1
R_{el}	9431-1057-31			1/8W, MR 1MΩ	1
Rx_1 Rx_2	9473-3329-61		Variable resistor	RG4-HAS 3.3KΩ	2
Rx_3	9473-1059-61			RG4-HAS 1MΩ	1
Rx_4	9473-3339-61			RG4-HAS 33KΩ	1
Rx_5	9473-2239-62			RG4-HAS 22KΩ	1
Rx_6	9473-4729-62			RG4-HAS 4.7KΩ	1
Rx_7	9473-1529-61			RG4-HAS 1.5KΩ	1
C_1	9535-1045-61		Condenser	0.1μF/35V	1
C_2	2005-8362-02			1.5μF/35V	1
C_3	9535-4744-36			0.47μF/35V	1
C_5	9564-2238-61			CM-21 0.022μF	1
C_6	9564-1028-61			CM-21 1000PF	1
C_{12}	9564-2228-61			CM-21 2200PF	1
C_{13}	9565-4728-61			RD200YM472Z50V03 4700PF	1
ℓ_1	2005-4221-03		Lead wire Green	φ0.08/7 wires ℓ=35mm	1
ℓ_2	2005-4222-04		Black	φ0.08/7 wires ℓ=30mm	1
ℓ_3	2005-4223-04		Brown	φ0.08/7 wires ℓ=30mm	1
ℓ_5	2005-4225-03		Blue	φ0.08/7 wires ℓ=60mm	1
J2	2005-4263-01		Jamp lead	φ0.4 ℓ=12mm	1
J8	2005-4269-01			φ0.4 ℓ=4mm	2
J9	2005-4270-01			φ0.4 ℓ=3mm	2
J11	2005-4275-01			φ0.4 ℓ=5mm	1
J12	2005-4277-01			φ0.4 ℓ=2mm	1

Part No. 部品番号	Part Name 部品名称	Qty 員数
2005-0380-11	SPC holder set SPCホルダーセット	1
2005-0384-11	Circuit base plate-A set 基板Aセット	1
2005-8305-0	Field effect transistor FET	1
2005-0430-11	Mode change switch holder set モード切換SW接片ホルダーセット	1
2005-9012-01	Mode change switch holder guide axis B モード切換SWホルダーガイド軸B	1
2005-9425-01	S.S infinder signal boss SSインフィンダー信号ボス	1
9721-0120-00	E-ring Eリング	1
9791-2640-86	Washer 薄ワッシャー	Some 若干
9792-2640-86	Washer 薄ワッシャー	Some 若干
9793-2640-86	Washer 薄ワッシャー	Some 若干

2005-0382-11

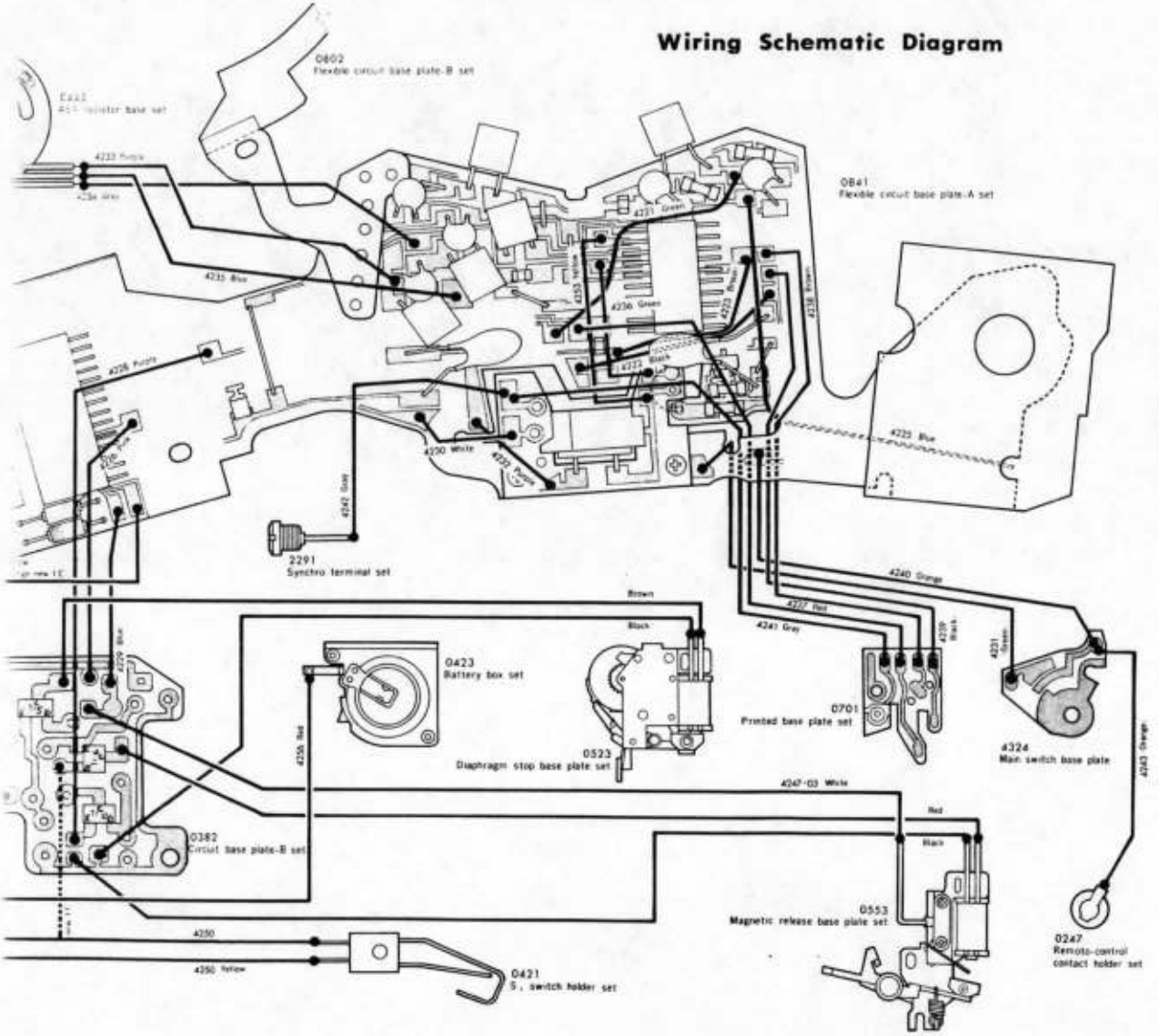


Assy. Part No. 2005-0382-11　Assy. Part Name Circuit base plate-B

B基板セット

Simbol	Part No.	Com.	Part Name	Typ.	Qty.
T_5 T_8	9363-1632-02	03, 04	Transistor	2SA812	2
T_{13}	9362-1633-02	03, 04			1
R_{17} R_{45}	9422-3316-32		Fixed resistor	ERD-10TJ 330Ω	2
R_{18} R_{20}	9422-2226-32			ERD-10TJ 2.2KΩ	2
R_{44}	9422-3926-32			ERD-10TJ 3.9KΩ	1
C_5 C_8	9531-1075-31		Condenser	CS15E0F 101MS 3.15V/100μF	2
C_{14}	9533-3355-34			TYPE 202 16V/3.3μF	1

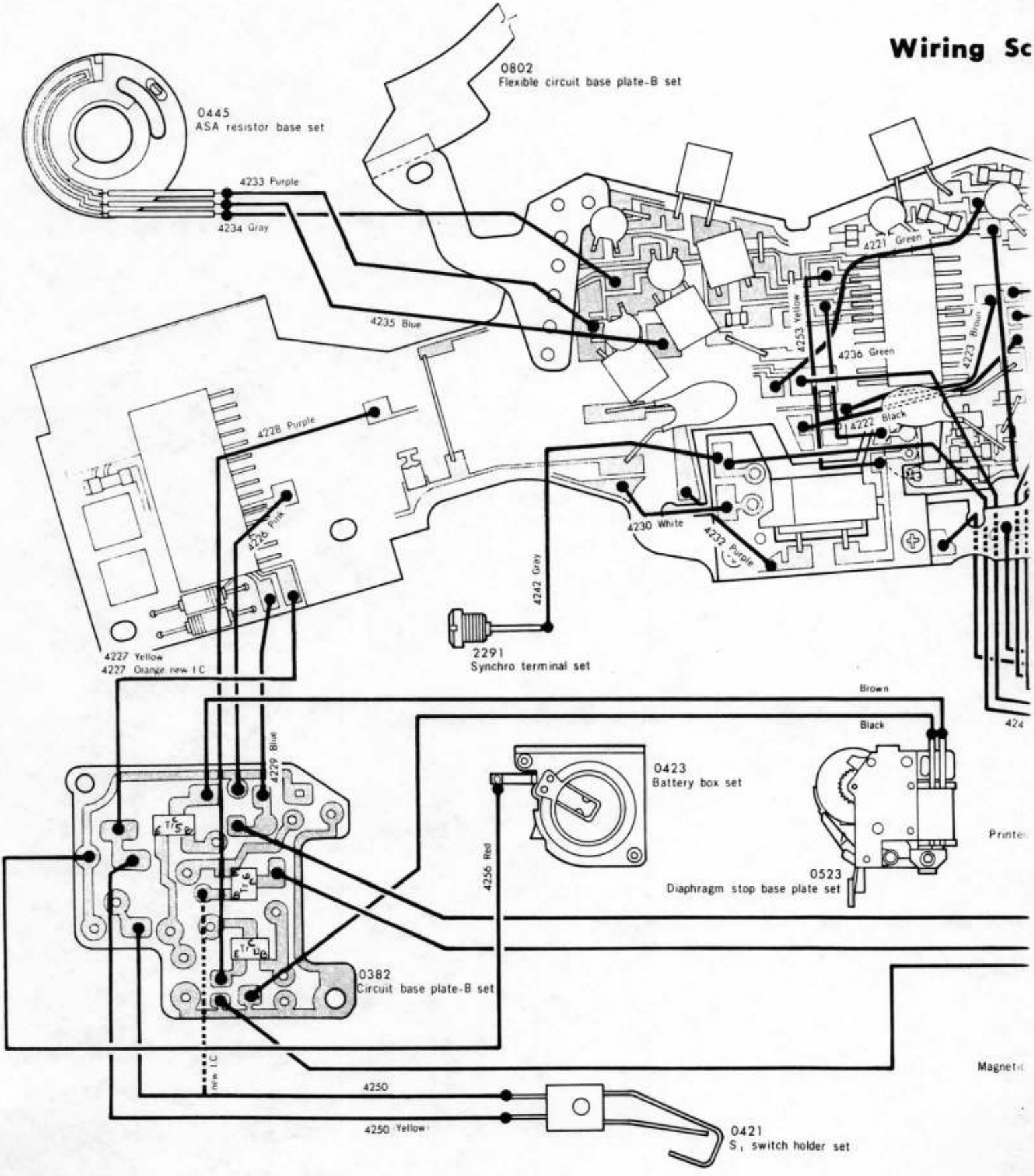
Wiring Schematic Diagram



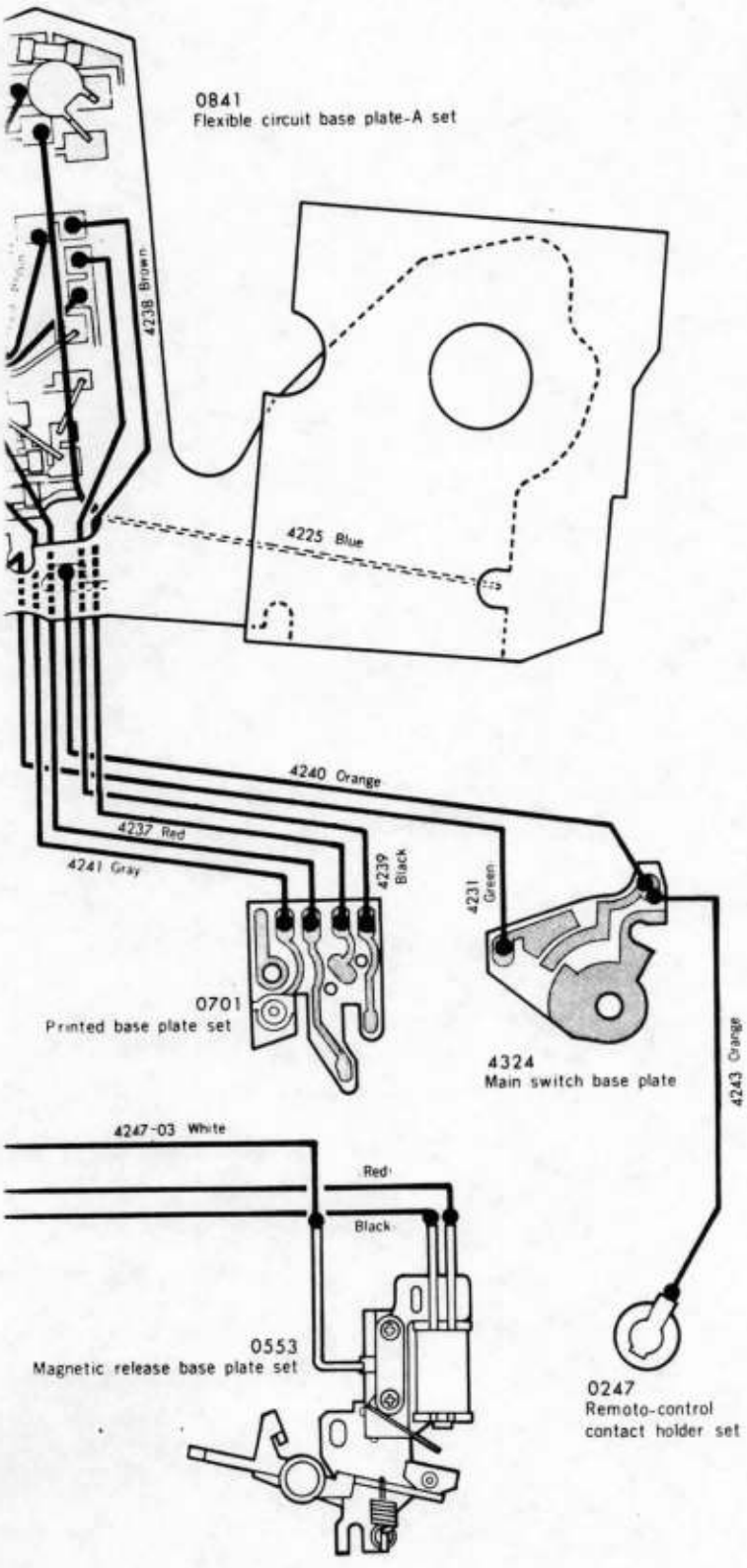
Lead wire list

Part No.	Color	Typ.	Qty.
2005-4221-01	Green		1
2005-4222-01	Black		1
2005-4223-01	Brown		1
2005-4225-01	Blue		1
2005-4226-04	Pink		1
2005-4227-03 2005-4227-04	Yellow Orange		1
2005-4228-03	Purple		1
2005-4229-03	Blue		1
2005-4230-03	White		1
2005-4231-03	Green		1
2005-4232-03	Purple		1
2005-4233-03	Purple		1
2005-4234-03	Gray		1
2005-4235-03	Blue		1
2005-4236-03	Green		1
2005-4237-05	Red		1
2005-4238-05	Brown		1
2005-4239-05	Black		1
2005-4240-03	Orange		1
2005-4241-04	Gray		1
2005-4242-03	Gray		1
2005-4243-03	Orange		1
2005-4247-03	White		1
2005-4250-03	Yellow		2
2005-4253-01	Yellow		1
2005-4256-01	Red		1

Wiring Sc


0802
Flexible circuit base plate-B set
0445
ASA resistor base set
4233 Purple
4234 Gray
4235 Blue
4221 Green
4253 Yellow
4223 Brown
4236 Green
4222 Black
4228 Purple
4226 Pink
4230 White
4232 Purple
4242 Gray
2291
Synchro terminal set
4227 Yellow
4227 Orange new I.C
Brown
Black
424
4229 Blue
0423
Battery box set
4256 Red
0523
Diaphragm stop base plate set
Printe
0382
Circuit base plate-B set
new I.C
4250
4250 Yellow
0421
S1 switch holder set
Magnet

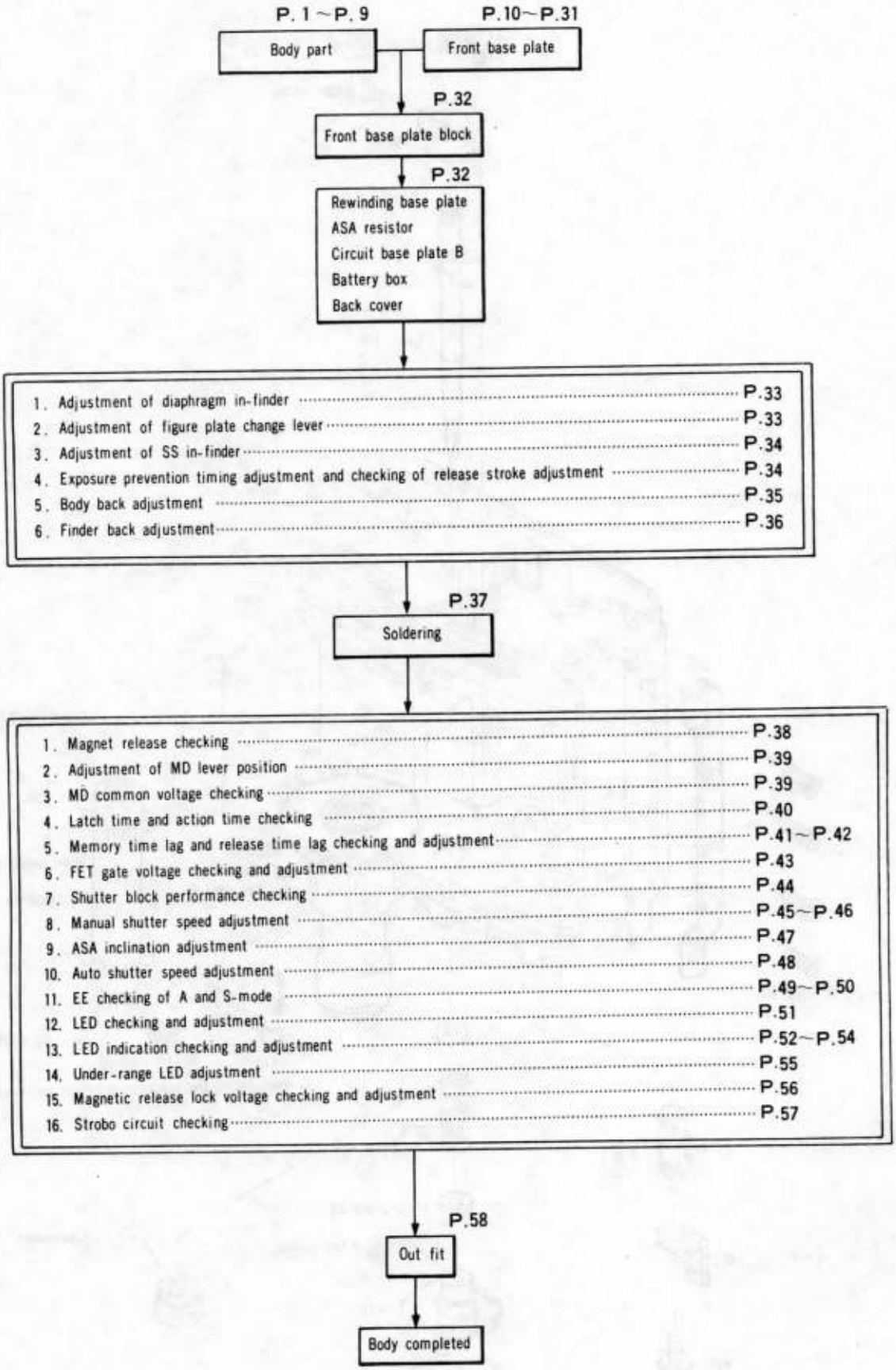
g Schematic Diagram



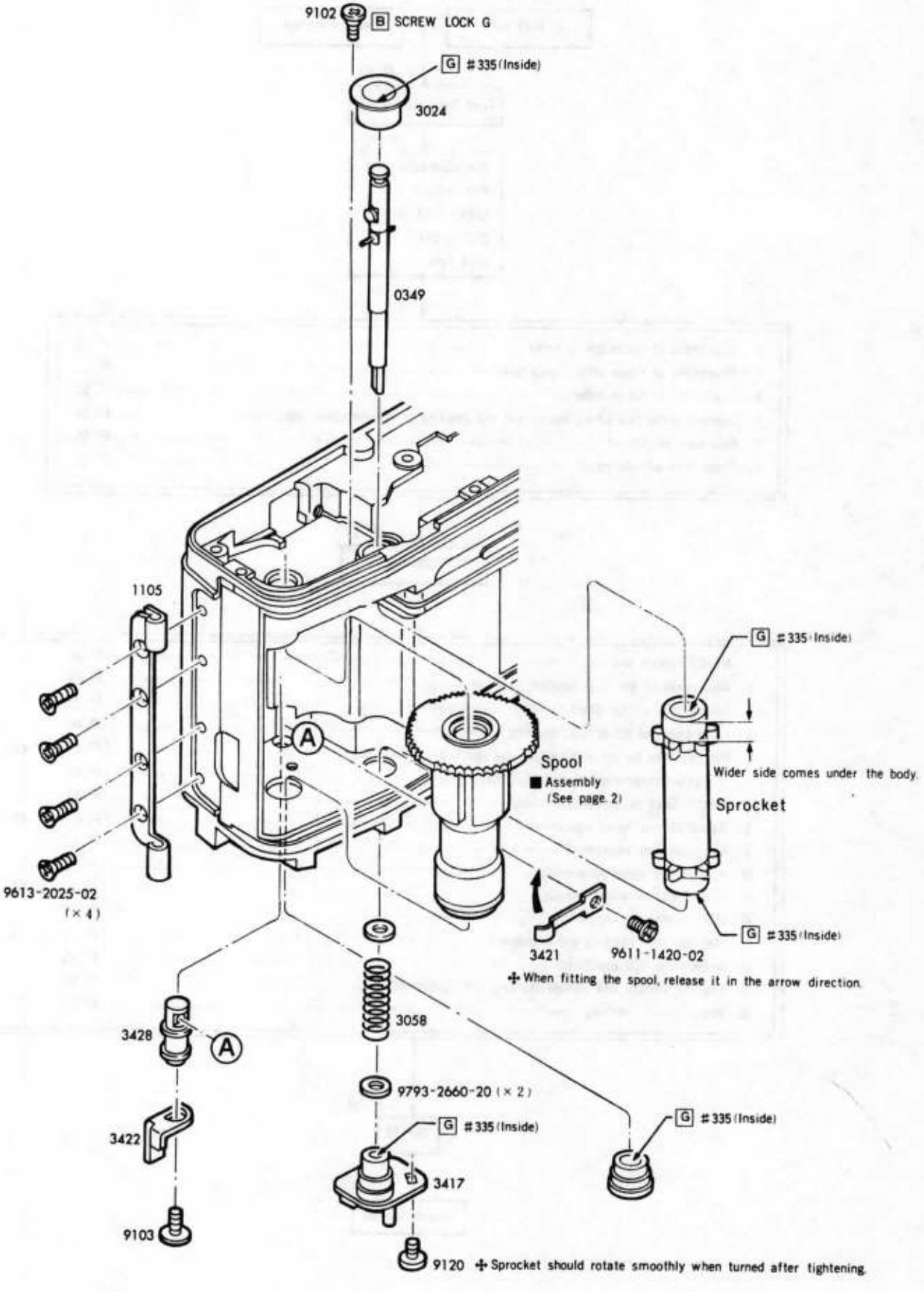
Lead wire list

Part No.	Color	Typ.	Qty.
2005-4221-01	Green	φ0.08/7 wires ℓ 35 mm	1
2005-4222-01	Black	φ0.08/7 wires ℓ 25 mm	1
2005-4223-01	Brown	φ0.08/7 wires ℓ 25 mm	1
2005-4225-01	Blue	φ0.08/7 wires ℓ 60 mm	1
2005-4226-04	Pink	φ0.08/7 wires ℓ 75 mm	1
2005-4227-03 2005-4227-04	Yellow Orange new I.C	φ0.08/7 wires ℓ 75 mm	1
2005-4228-03	Purple	φ0.08/7 wires ℓ 75 mm	1
2005-4229-03	Blue	φ0.08/7 wires ℓ 65 mm	1
2005-4230-03	White	φ0.08/7 wires ℓ 15 mm	1
2005-4231-03	Green	φ0.08/7 wires ℓ 85 mm	1
2005-4232-03	Purple	φ0.08/7 wires ℓ 15 mm	1
2005-4233-03	Purple	φ0.08/7 wires ℓ 65 mm	1
2005-4234-03	Gray	φ0.08/7 wires ℓ 70 mm	1
2005-4235-03	Blue	φ0.08/7 wires ℓ 75 mm	1
2005-4236-03	Green	φ0.08/7 wires ℓ 20 mm	1
2005-4237-05	Red	φ0.08/7 wires ℓ 100 mm	1
2005-4238-05	Brown	φ0.08/7 wires ℓ 100 mm	1
2005-4239-05	Black	φ0.08/7 wires ℓ 95 mm	1
2005-4240-03	Orange	φ0.08/7 wires ℓ 90 mm	1
2005-4241-04	Gray	φ0.08/7 wires ℓ 120 mm	1
2005-4242-03	Gray	φ0.08/7 wires ℓ 80 mm	1
2005-4243-03	Orange	φ0.08/7 wires ℓ 20 mm	1
2005-4247-03	White	φ0.08/7 wires ℓ 70 mm	1
2005-4250-03	Yellow	φ0.08/7 wires ℓ 60 mm	2
2005-4253-01	Yellow	φ0.08/7 wires ℓ 22 mm	1
2005-4256-01	Red	φ0.08/7 wires ℓ 28 mm	1

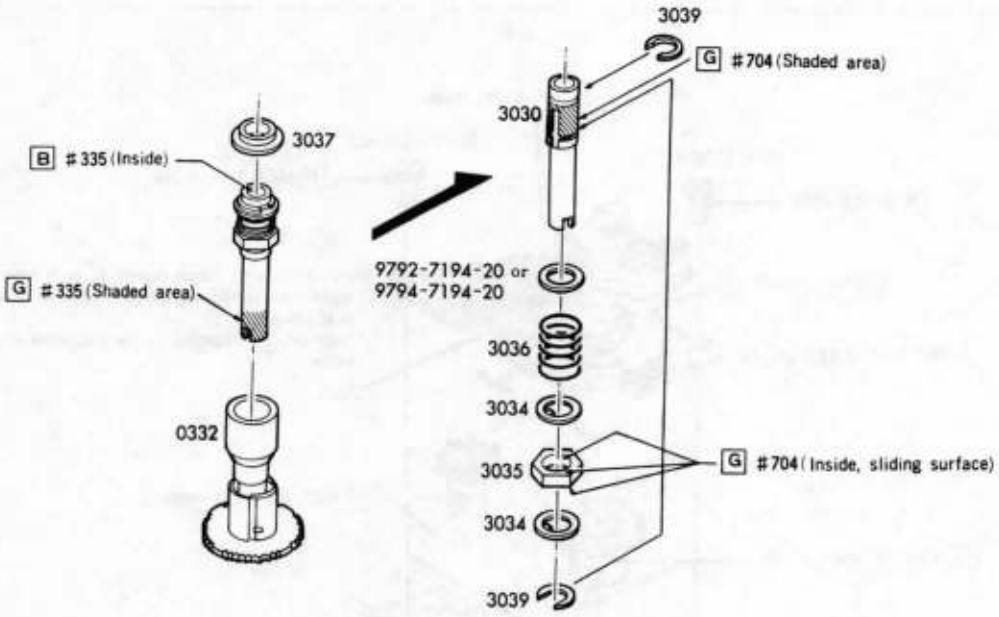
3 To completion of body (P.32~P.58)


P. 1 ~ P. 9
Body part
P.10 ~ P.31
Front base plate
P.32
Front base plate block
P.32
Rewinding base plate
ASA resistor
Circuit base plate B
Battery box
Back cover
1. Adjustment of diaphragm in-finder P.33
2. Adjustment of figure plate change lever P.33
3. Adjustment of SS in-finder P.34
4. Exposure prevention timing adjustment and checking of release stroke adjustment P.34
5. Body back adjustment P.35
6. Finder back adjustment P.36
P.37
Soldering
1. Magnet release checking P.38
2. Adjustment of MD lever position P.39
3. MD common voltage checking P.39
4. Latch time and action time checking P.40
5. Memory time lag and release time lag checking and adjustment ..... P.41~P.42
6. FET gate voltage checking and adjustment P.43
7. Shutter block performance checking P.44
8. Manual shutter speed adjustment ..... P.45~P.46
9. ASA inclination adjustment P.47
10. Auto shutter speed adjustment P.48
11. EE checking of A and S-mode ..... P.49~P.50
12. LED checking and adjustment P.51
13. LED indication checking and adjustment ..... P.52~P.54
14. Under-range LED adjustment P.55
15. Magnetic release lock voltage checking and adjustment P.56
16. Strobo circuit checking P.57
P.58
Out fit
Body completed

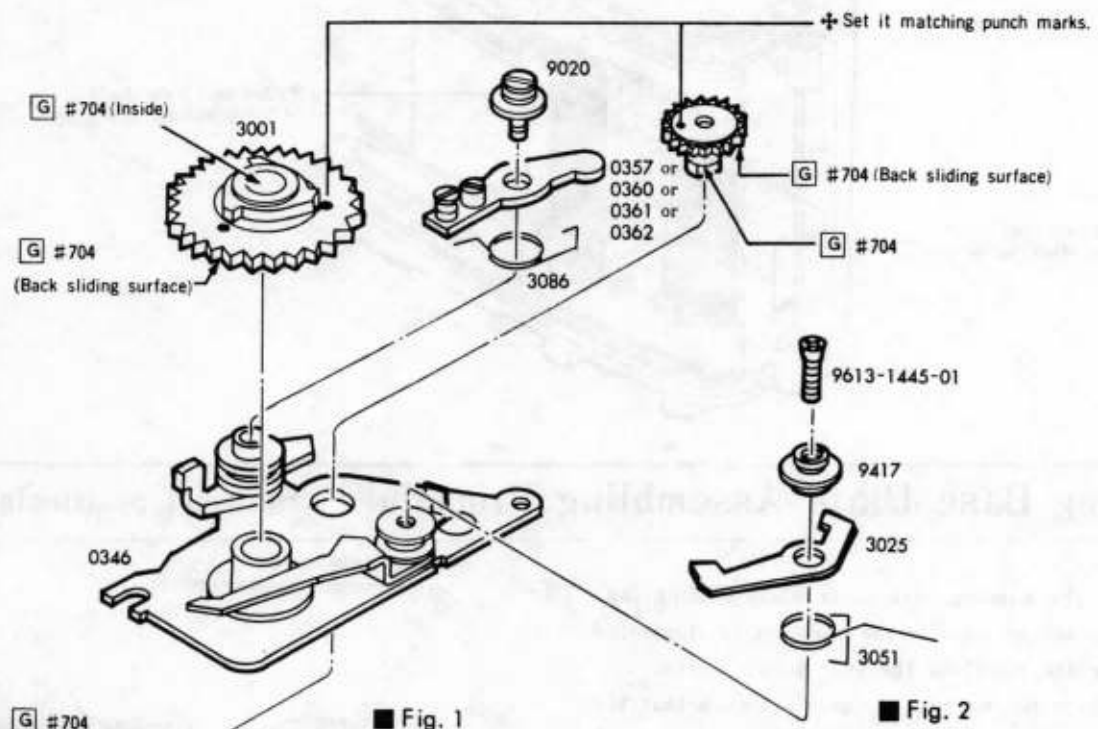
1 Spool and Sprocket



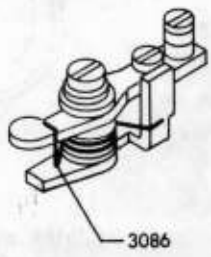
■ Spool



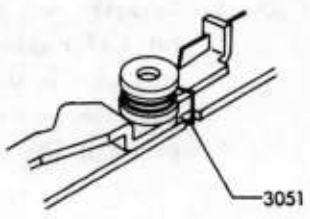
■ Winding Base Plate Assembly



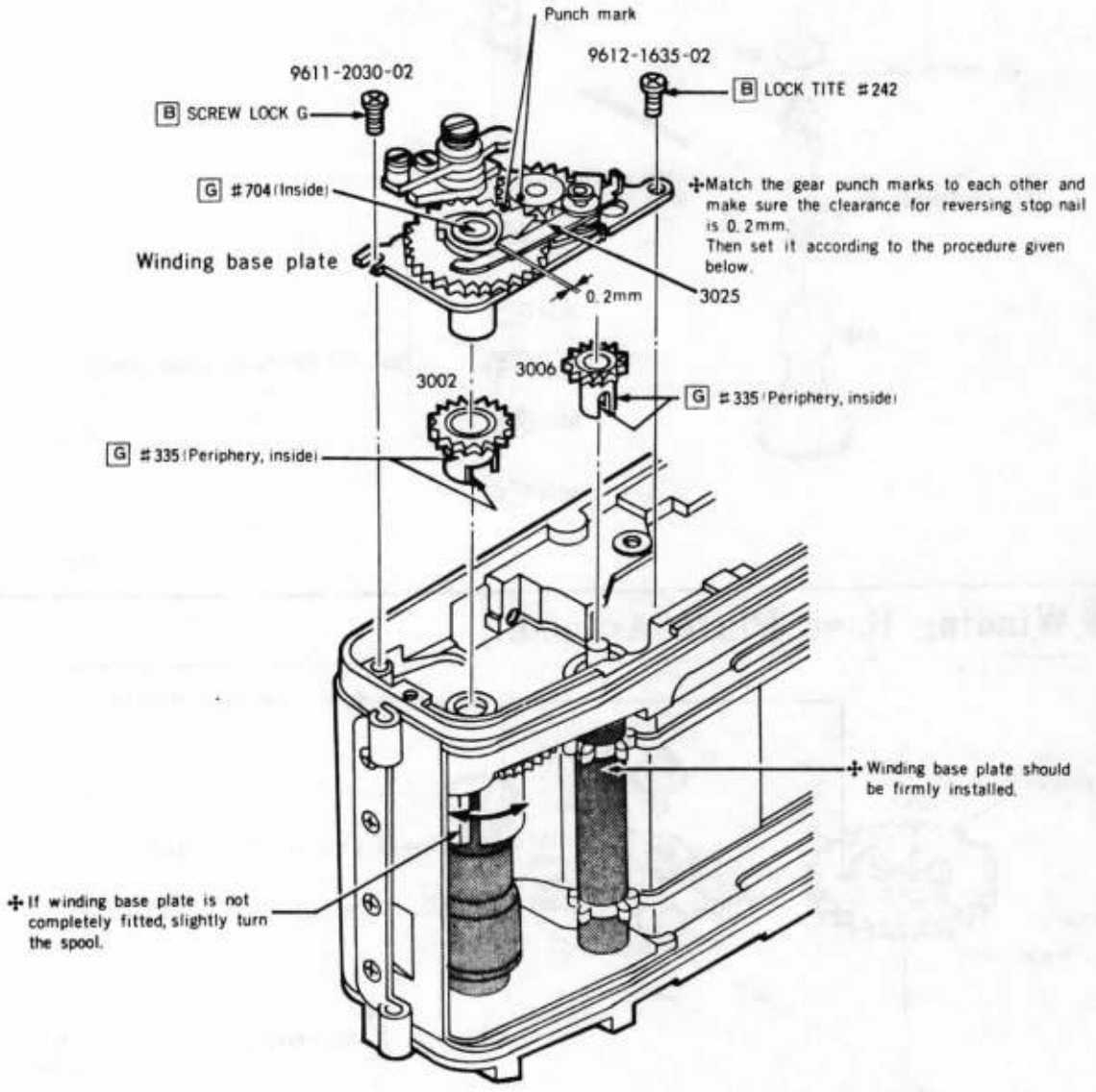
■ Fig. 1
How to engage 3086 SP



■ Fig. 2
How to engage 3051 SP



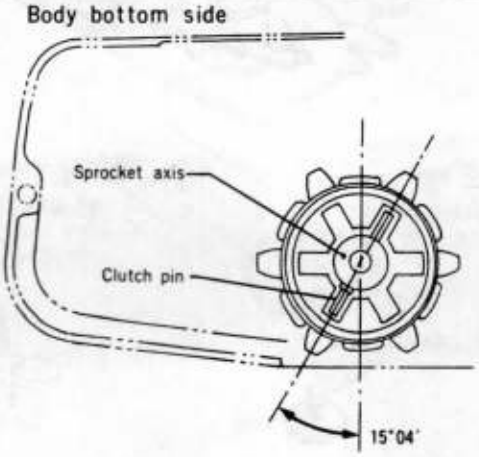
2 Winding Base Plate


Punch mark
9611-2030-02
9612-1635-02
B SCREW LOCK G
B LOCK TITE #242
G #704 (Inside)
✣Match the gear punch marks to each other and make sure the clearance for reversing stop nail is 0.2mm.
Then set it according to the procedure given below.
Winding base plate
0.2mm
3025
3002
3006
G #335 (Periphery, inside)
G #335 (Periphery, inside)
✣ Winding base plate should be firmly installed.
✣ If winding base plate is not completely fitted, slightly turn the spool.

■ Winding Base Plate Assembling Procedure (Sprocket positioning)

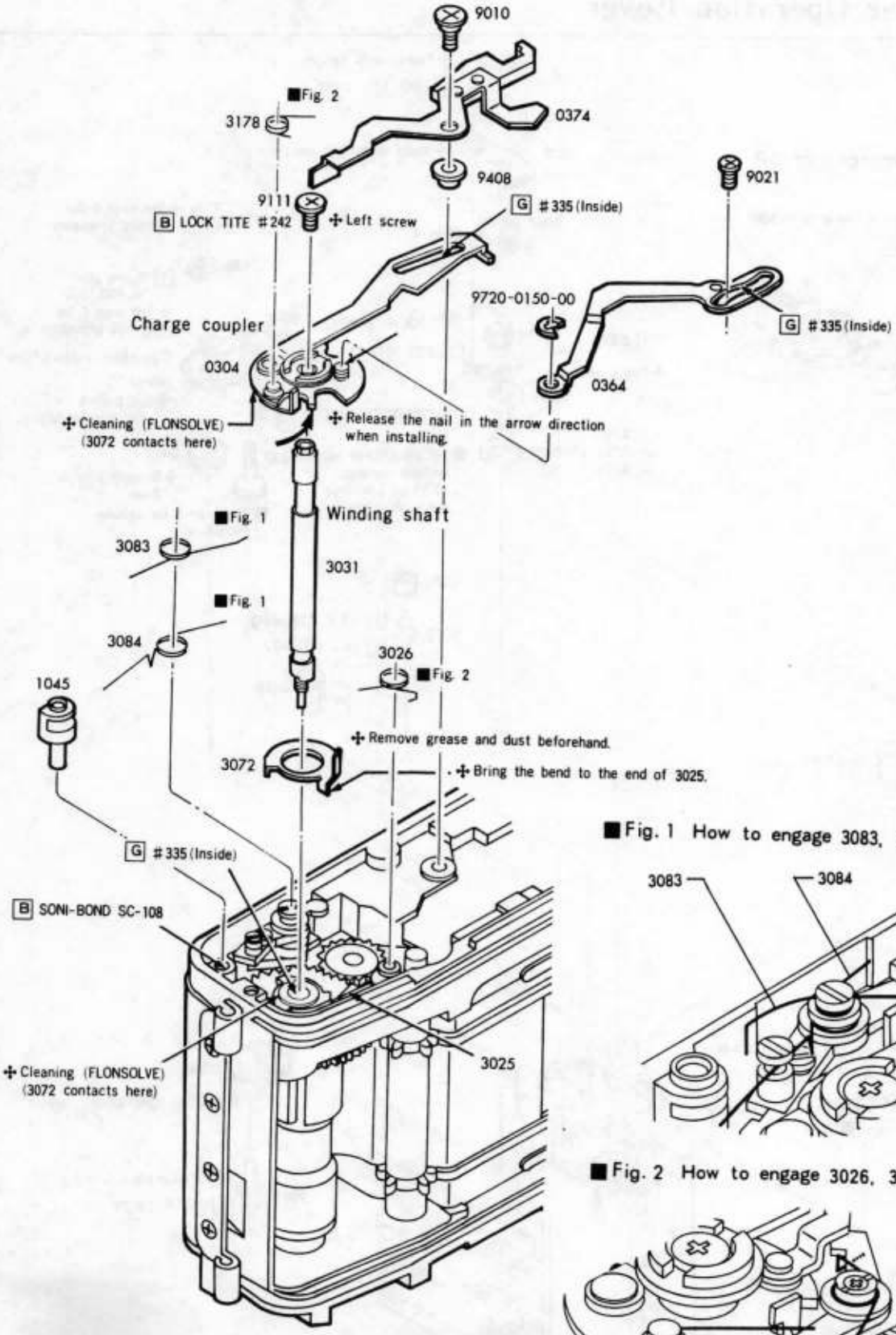
1. Set the winding base plate while holding the sprocket by hand in the position as ilustrated at right, matching the gear punch marks.
2. Tighten the screw to a position such that the sprocket shaft is aligned to the shaft hole of the winding base plate.

   Check: Sprocket nail is positioned as illustrated at right when the spool is rotated once in the forward direction to make the clearance for of reversing stop nail (3025).

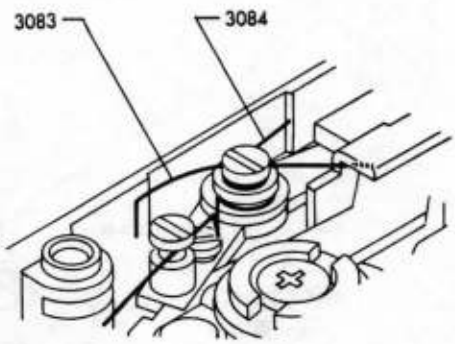


Clutch pin of the sprocket shaft should be 15°04′ to the body.

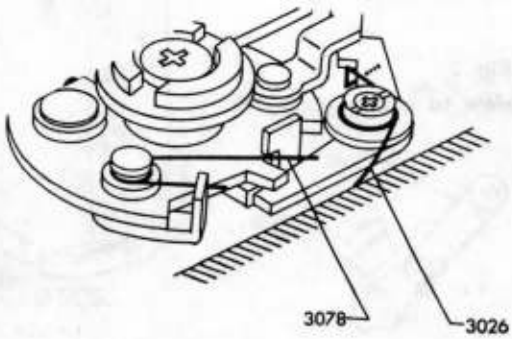
3 Winding Shaft and Charge Coupler



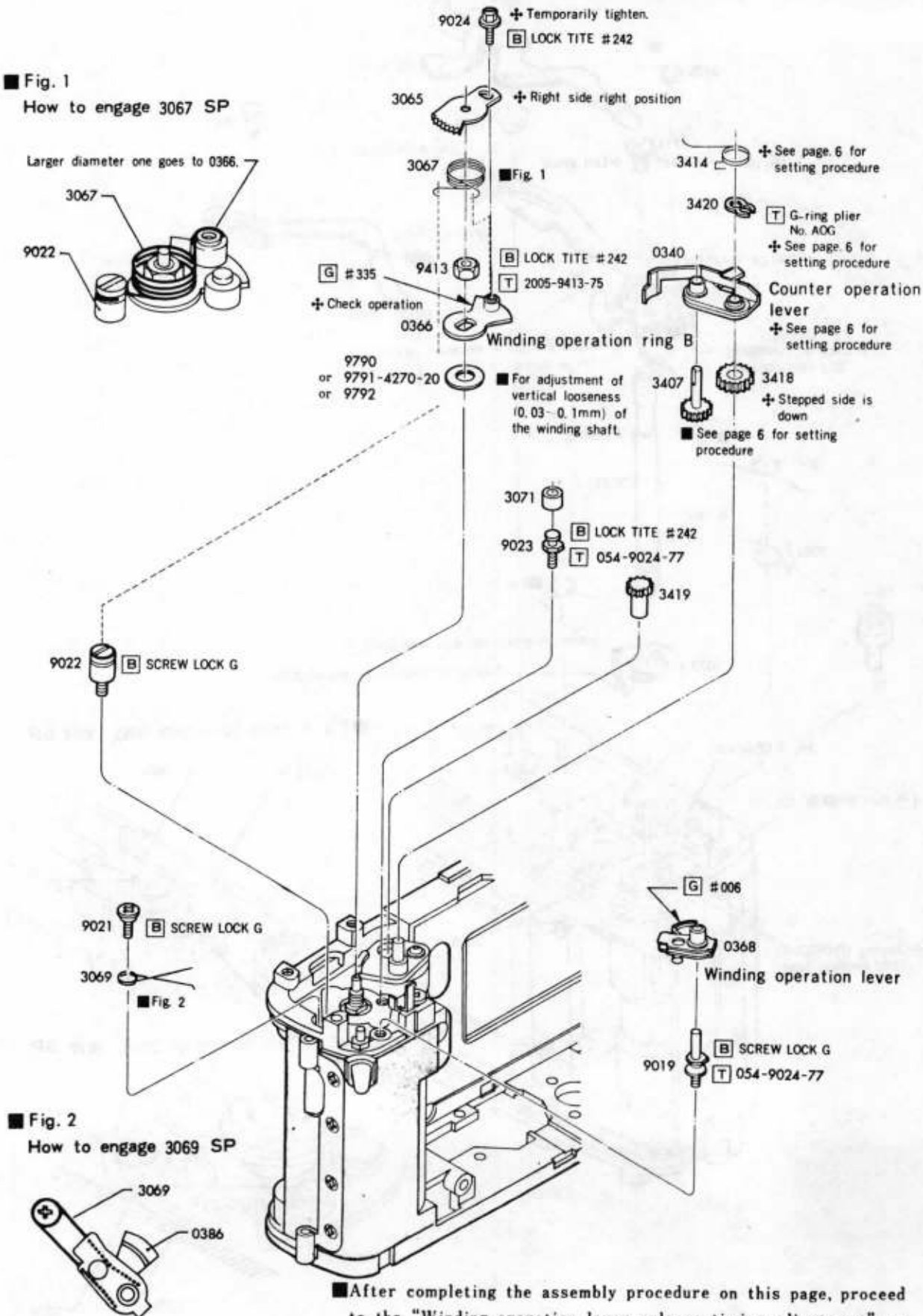
■Fig. 1 How to engage 3083, 3084 SP



■Fig. 2 How to engage 3026, 3078 SP



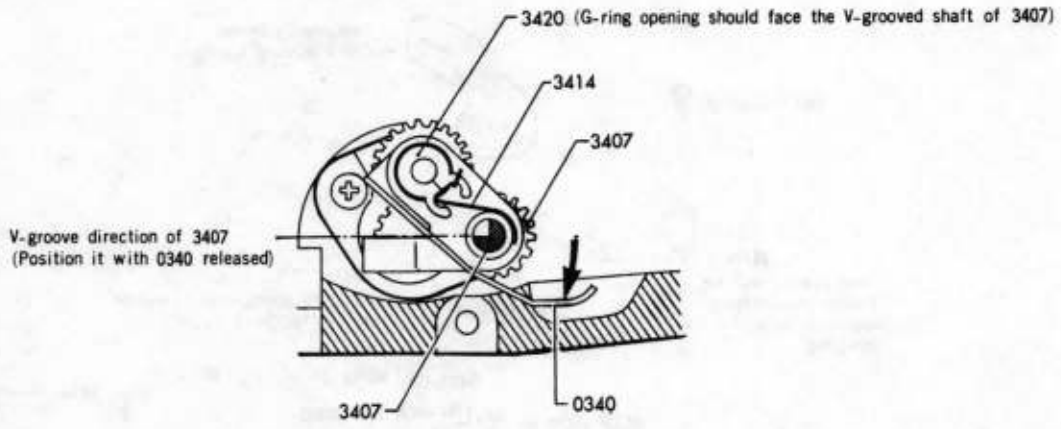
4 Winding Operation Ring B, Winding Operation Lever and Counter Operation Lever



■After completing the assembly procedure on this page, proceed to the "Winding operation lever release timing adjustment" on page. 6.

■ Counter Operation Lever Setting Procedure

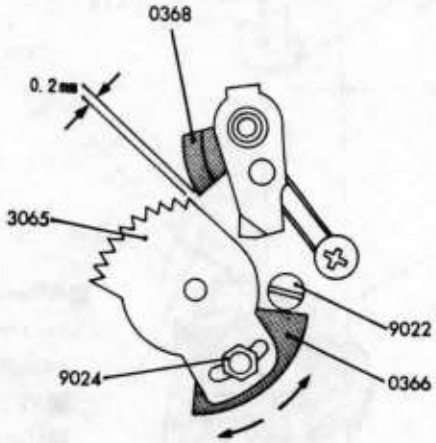
Set the parts so that they are positioned as illustrated here with the charge coupler returned.



• With 0340 placed in contact with the body by pushing in the arrow direction, find the V-groove position of 3407 and the setting position of 3420.

■ Winding Operation Lever Release Timing Adjustment

1. Release the engagement of charge coupler by pushing the film advance release lever at the bottom of body. Then rotate winding operation ring B (0366) until it touches operation ring stopper A (9022).

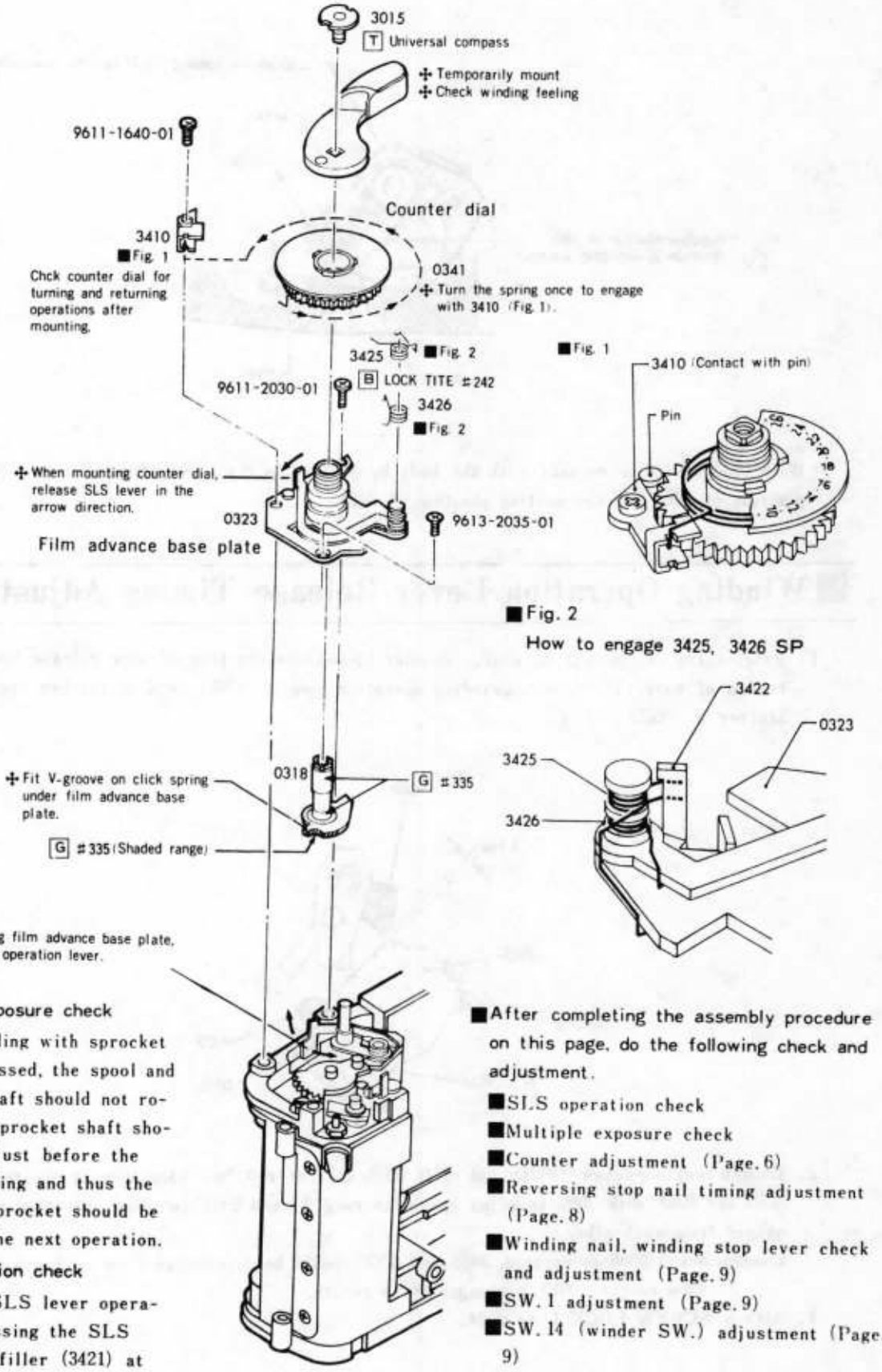


2. Loosen coupling screw (9024) and shift 3065 so that a 0.2mm clearance is created between 3065 and 0368 with 3065 (winding operation ring A) and 0368 (winding operation lever) disengaged from each other.

   Check: When 0366 is rotated, 3065 and 0368 should be disengaged from each other just before 0366 touches 9022, causing 0368 to return.

3. Attach SCREW LOCK G to 9024.

5 Film Advance Base Plate and Counter Dial



■Multiple exposure check

During winding with sprocket shaft depressed, the spool and sprocket shaft should not rotate. The sprocket shaft should return just before the end of winding and thus the spool and sprocket should be ready for the next operation.

■SLS operation check

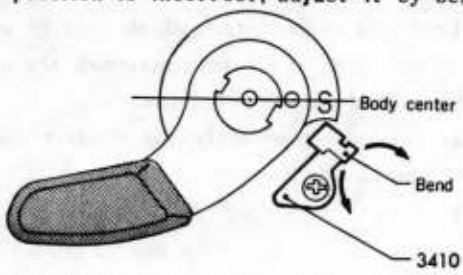
Check the SLS lever operation by pressing the SLS designation filler (3421) at the spool section.

■After completing the assembly procedure on this page, do the following check and adjustment.

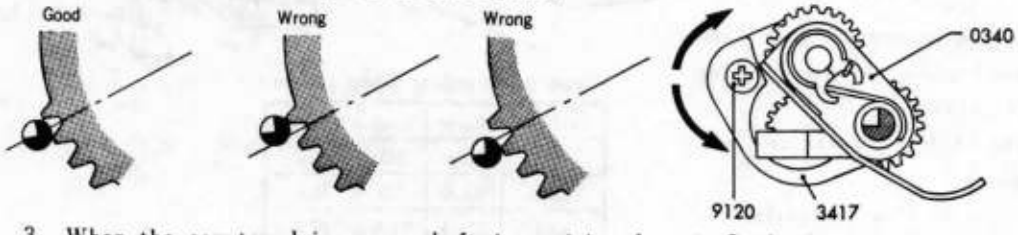
- ■SLS operation check
- ■Multiple exposure check
- ■Counter adjustment (Page. 6)
- ■Reversing stop nail timing adjustment (Page. 8)
- ■Winding nail, winding stop lever check and adjustment (Page. 9)
- ■SW. 1 adjustment (Page. 9)
- ■SW. 14 (winder SW.) adjustment (Page. 9)

■ Film Counter Adjustment

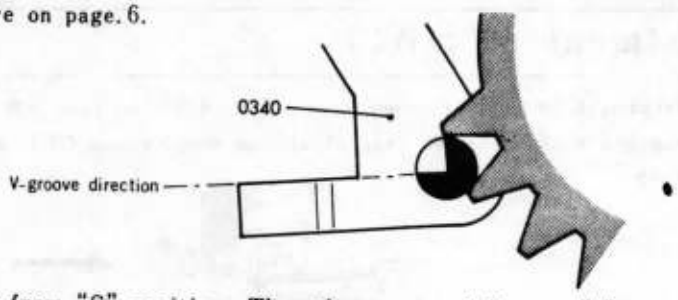
1. Mount the back cover. The "S" position of the counter should be as illustrated below with the back cover open. If the position is incorrect, adjust it by bending the counter stopper (3410).



2. With the back cover closed, the counter drive gear (3407) shaft should be at the first tooth bottom center of counter ratchet. If the shaft position is wrong, loosen 9120 and adjust the position of counter operation base plate.



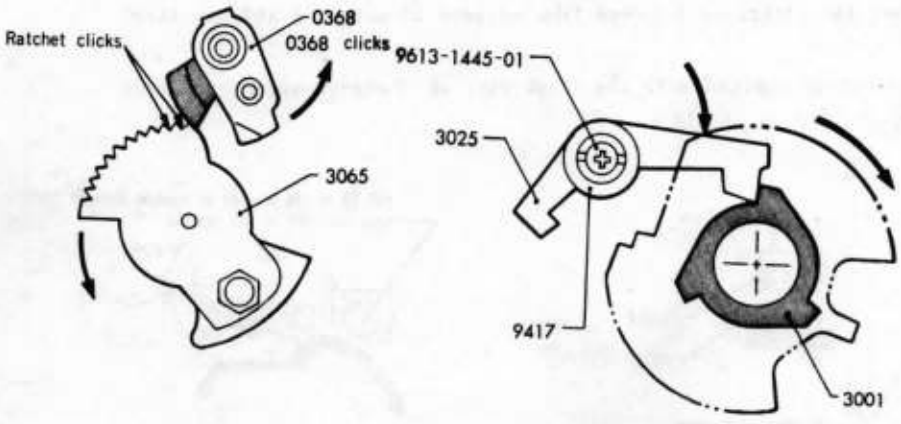
3. When the counter drive gear shaft is positioned as in 2, the V-groove of 3407 should be in the position as illustrated below. If the position is incorrect, re-adjust the position of 3407 according to the procedure on page. 6.



Check: Do winding twice from "S" position. Then the counter indicates "1". Also, continue winding and check for skip, double feed, or standstill.

■ Reversing Stop Nail Timing Adjustment

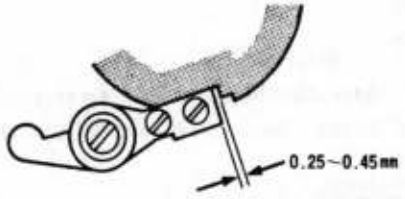
Loosen 9613-1445-01 and turn the reversing nail collar (9417) so that reversing stop nail (3025) is engaged with winding gear (3001) just before winding operation lever (0368) disengages from winding operation ring A (3065) when winding operation is done while pressing the sprocket with the finger.

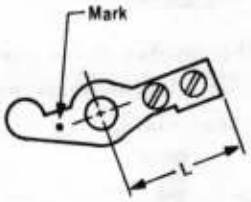


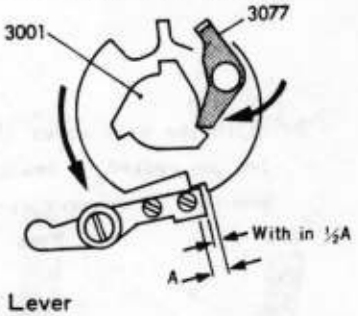
- Check the 0368 release timing to see that the ratchet clicks twice at the final stage of winding and subsequently 0368 clicks to disengage.
- So, do winding slowly while observing 3025 and make sure that 3025 is engaged with the nail of 3001 between the clicks of the ratchet and 0368 while winding slowly.

■ Winding Nail and Winding Stop Lever Check and Adjustment

1. When the winding lever is returned after complete winding, winding nail (3077) should be engaged with winding gear (3001) within 1/2 of the length between the winding stop lever engagements with the first and second steps of the charge coupler.
2. When the charge coupler has been completely returned, the clearance between winding stop lever and charge coupler should be 0.25~0.45mm.
3. With the charge coupler returned completely, the winding stop lever is completely engaged with the second step of the charge coupler.







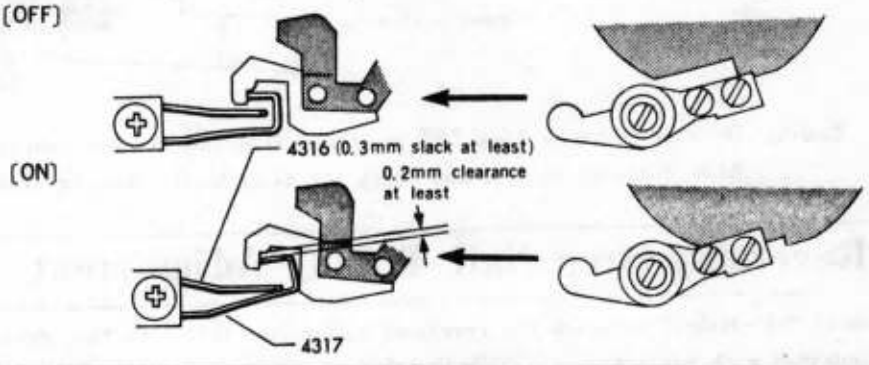
- If the above requirement in 1 or 2 is not satisfied, replace the winding stop lever and re-adjust. (For the type of lever, refer to the table at right.)
- If the condition in 3 is not satisfied, adjust the two springs (3083, 3084) for the winding stop lever.

Type of Winding Stop Lever

Part No.	Color	Mark	L (mm)
0357	Black	NO	10.2
0360	White	NO	10.0
0361	Black	YES	10.4
0362	White	YES	10.6

■ Adjustment of SW. 1

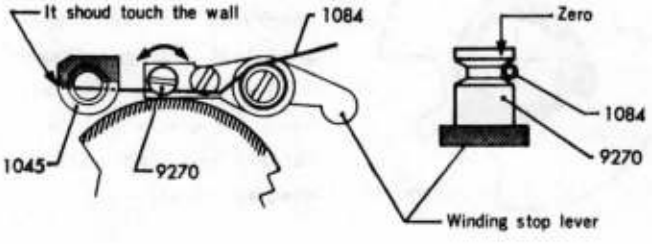
Make the adjustment by bending connectors (4316, 4317) so that SW. 1 is OFF with the winding stop lever engaged with the first step of charge coupler and OFF with the lever engaged with the second step.

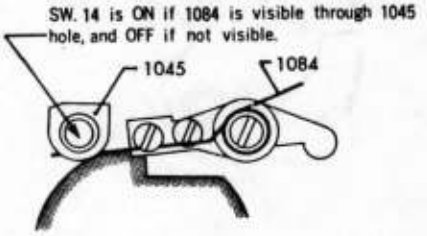


■ Adjustment of SW. 14 (Winder SW.)

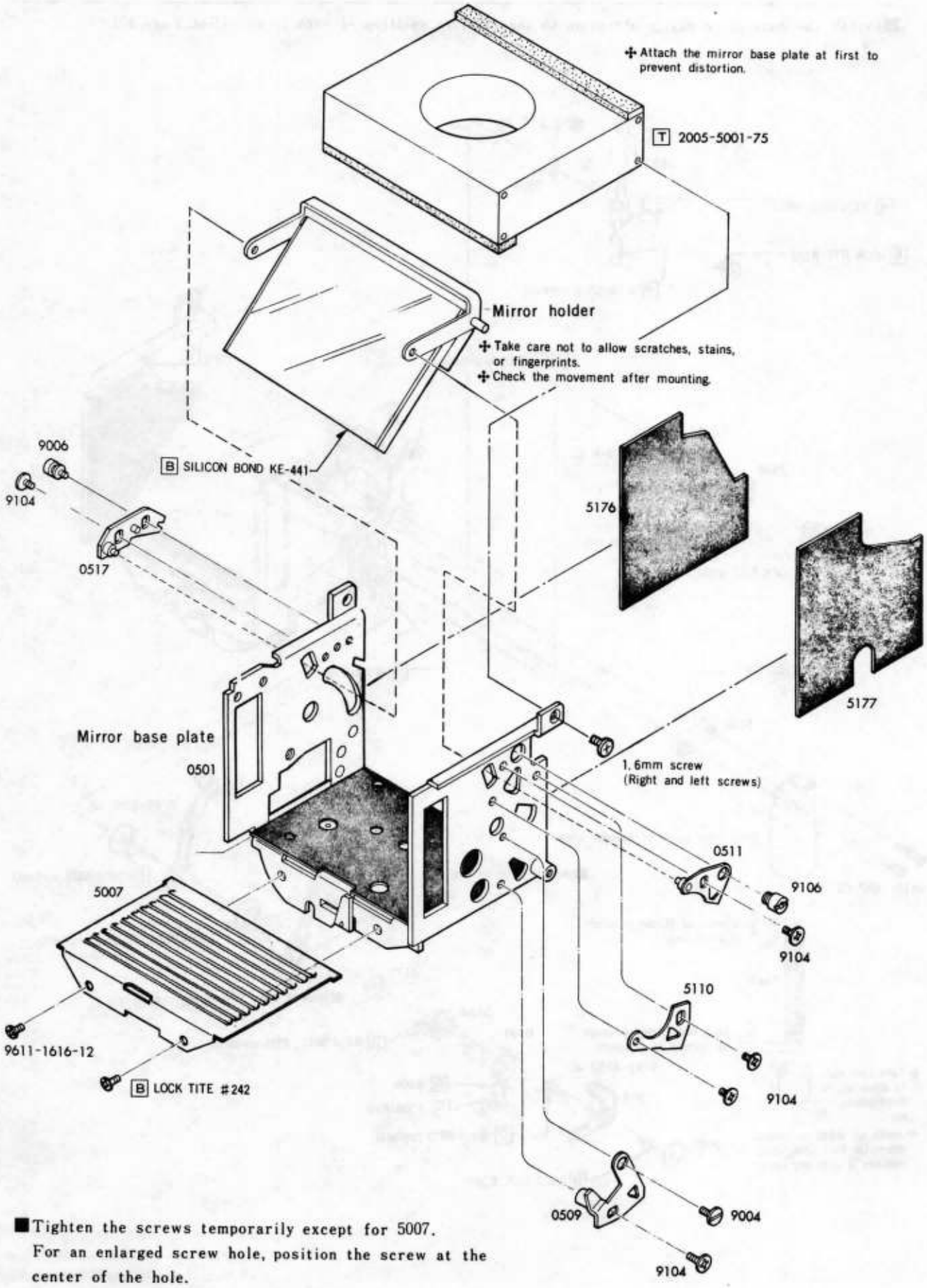
Make sure that the film advance stop spring (3084) is in contact with the wall of winder position holder (1045) when the winding stop lever is in contact with the shaded area of charge coupler. Then adjust 9270 so that the clearance between film advance stop spring and eccentric pin (9270) becomes zero.

Check: When the winding stop lever is engaged with the first step of charge coupler by slowly returning the winding lever, SW. 14 should be OFF.





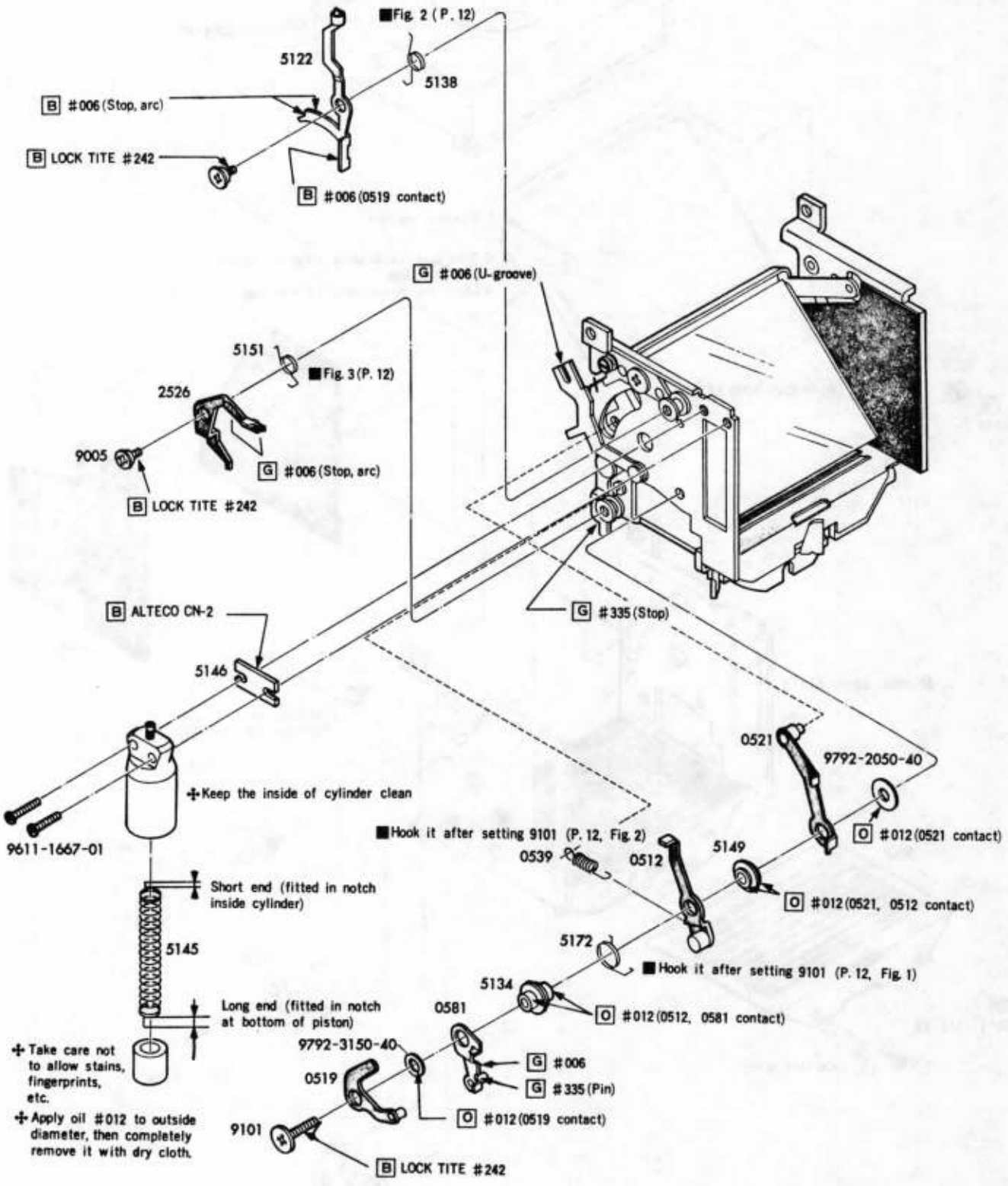
6 Mirror Base Plate- I



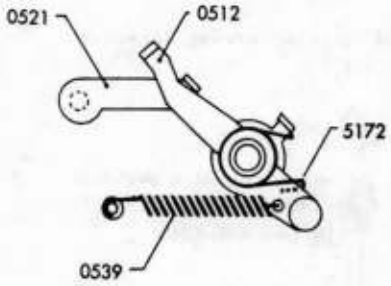
■ Tighten the screws temporarily except for 5007.
For an enlarged screw hole, position the screw at the center of the hole.

7 Mirror Base Plate-Ⅱ

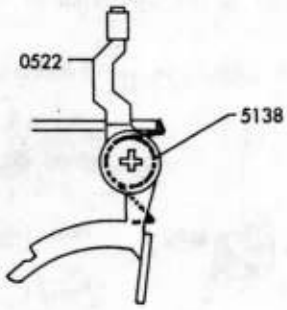
■Install the base plate paying attention to the relative position of each lever. (See Page. 12)



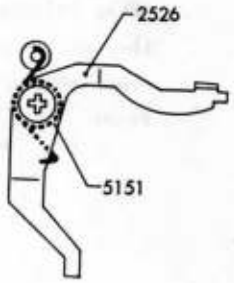
■Fig. 1
How to engage 5172, 0539 SP



■Fig. 2
How to engage 5138 SP

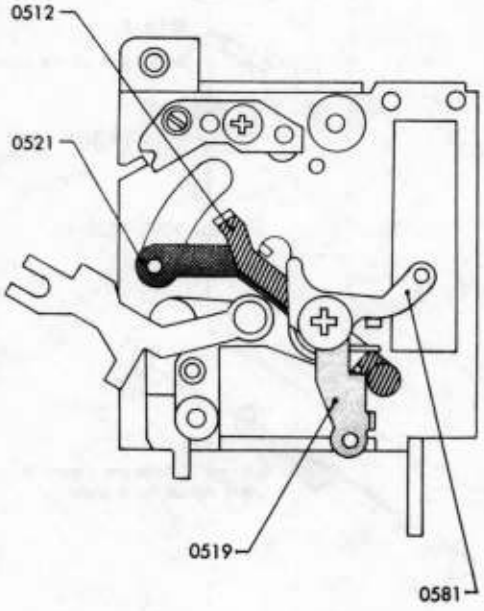


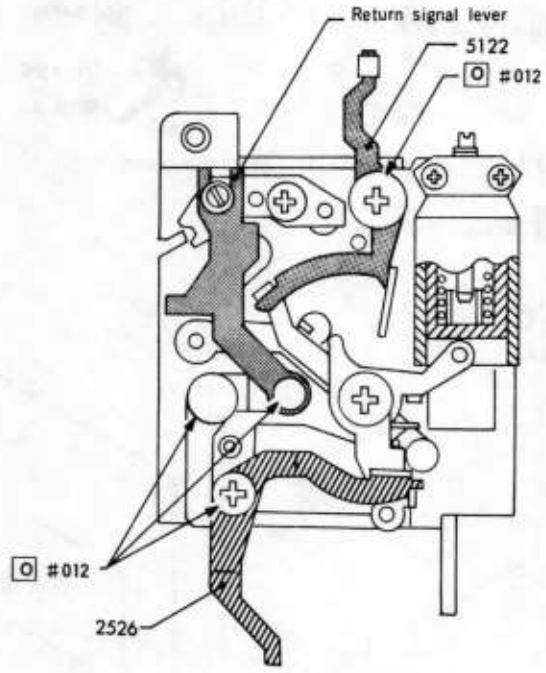
■Fig. 3
How to engage 5151 SP



■Position of each lever

[Complete assembly on Page. 11]





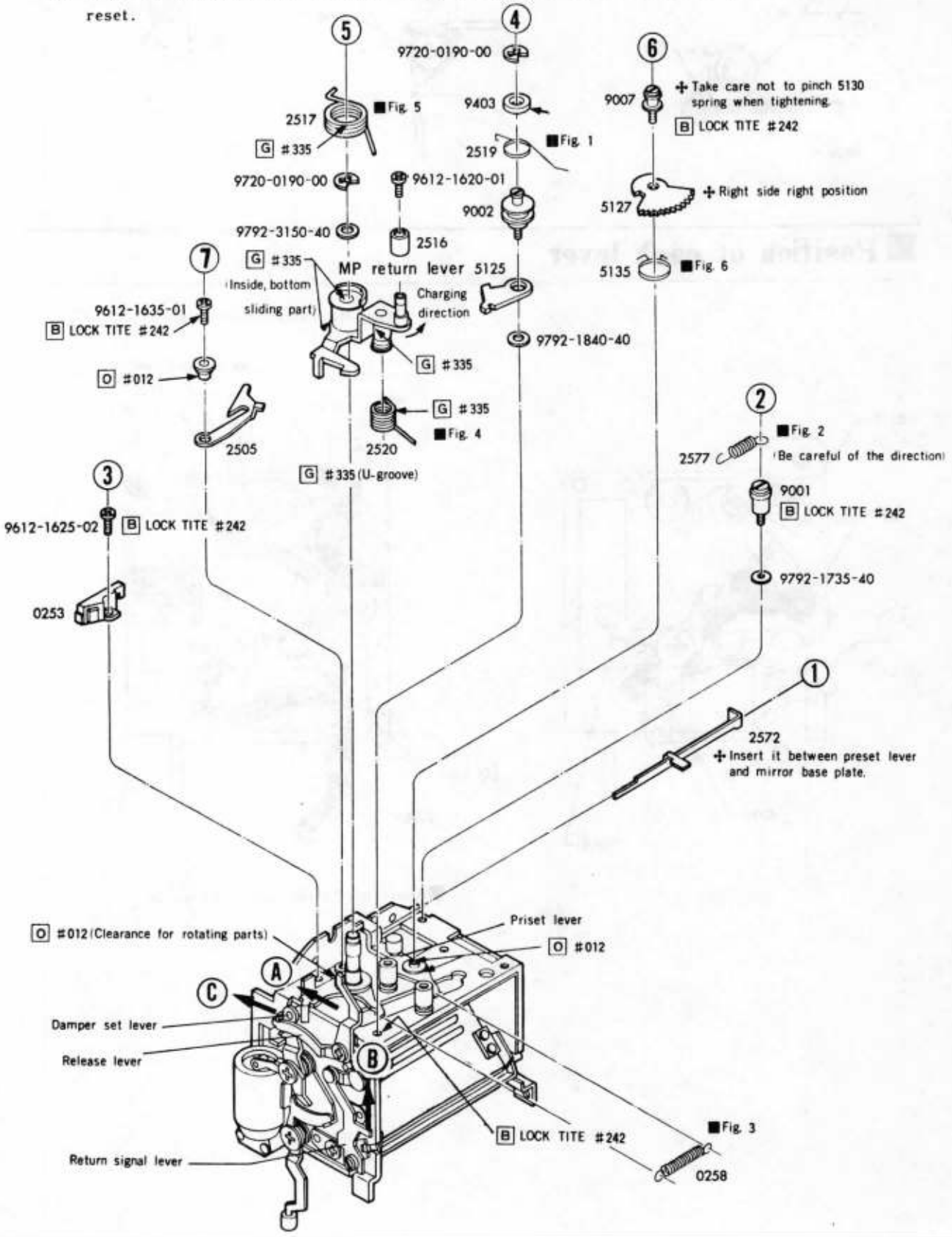
■Apply oil to the specified parts.

8 Mirror Base Plate-Ⅲ

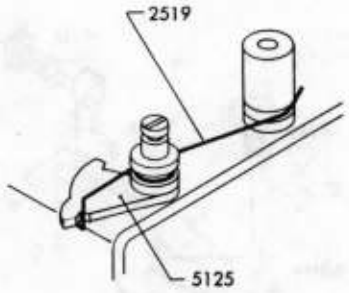
■Set up the parts in the order of ①~⑦.

■Carry out operational checks after assembly according to the following steps.

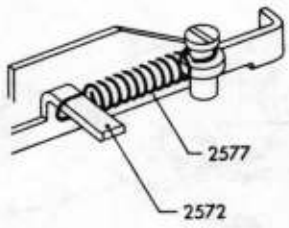
1. Charge by pushing MP return lever in arrow direction.
2. When release lever is pushed in the direction of arrow Ⓐ, preset lever operates to raise the mirror.
3. When return signal lever is pushed in the direction of arrow Ⓑ, mirror preset lever is reset.



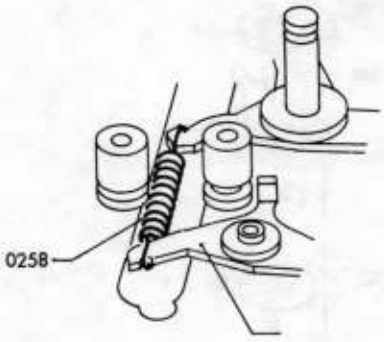
■ Fig. 1
How to engage 2519 SP



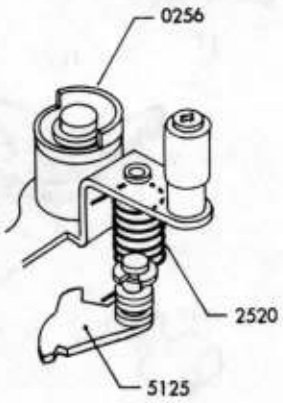
■ Fig. 2
How to engage 2577 SP



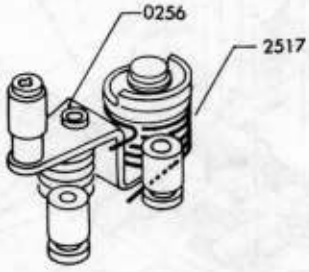
■ Fig. 3
How to engage 0258 SP



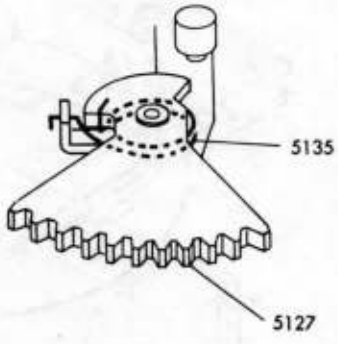
■ Fig. 4
How to engage 2520 SP



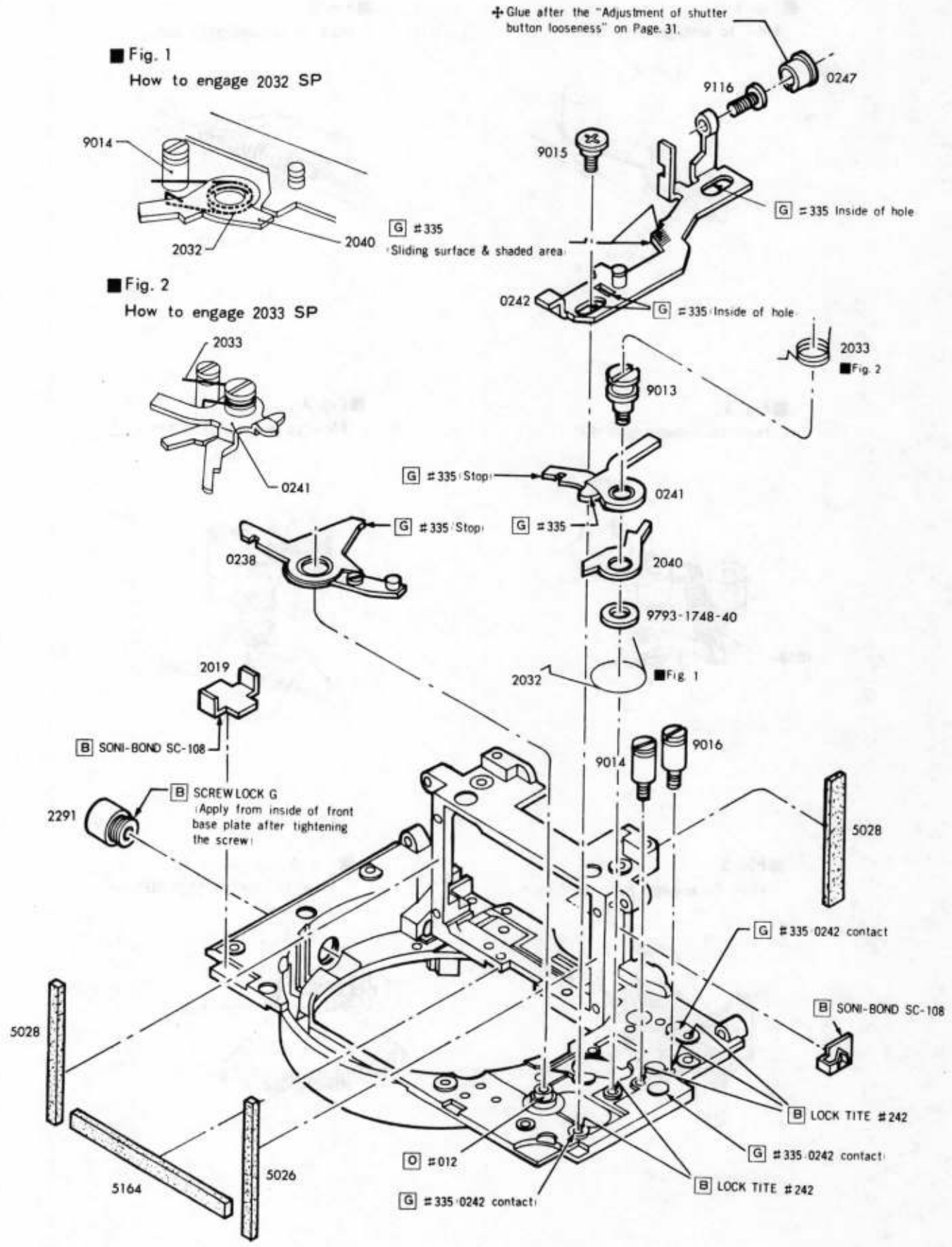
■ Fig. 5
How to eogage 2517 SP



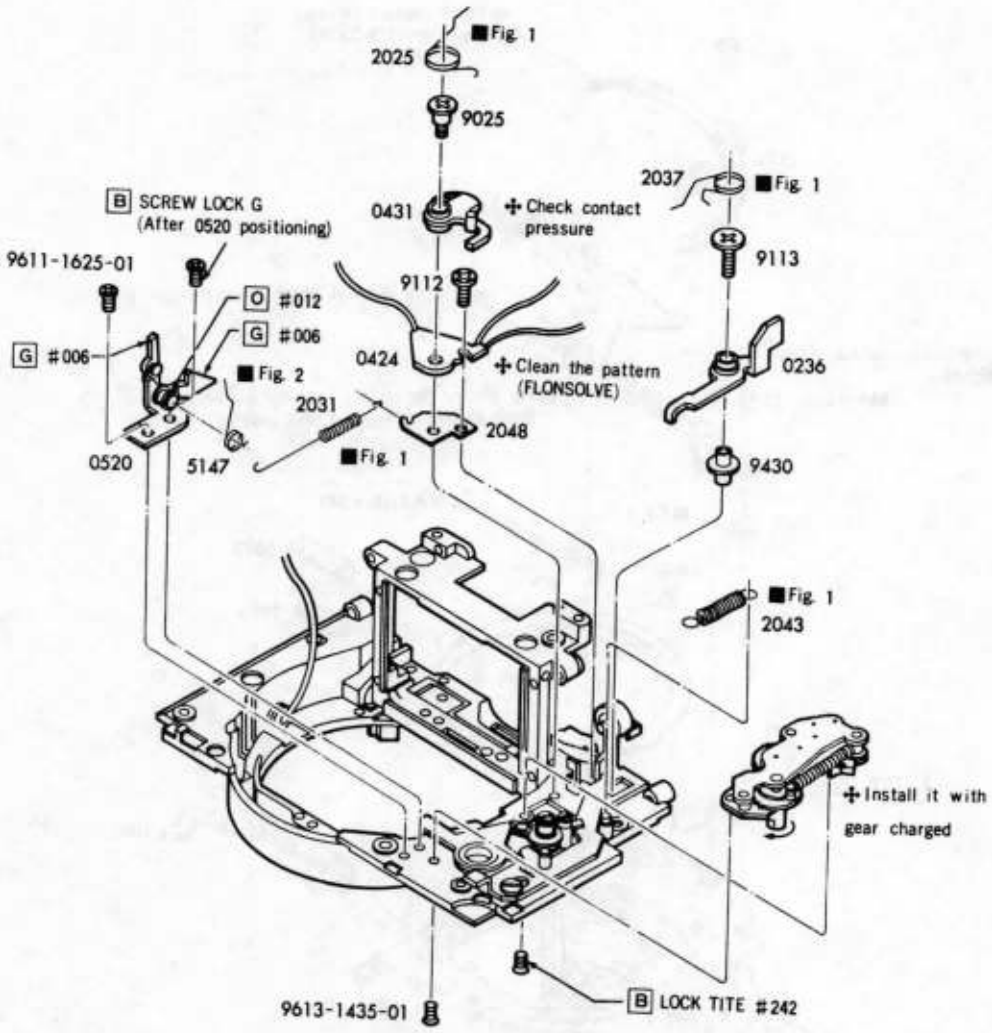
■ Fig. 6
How to engage 5135 SP



9 Front Base Plate- I

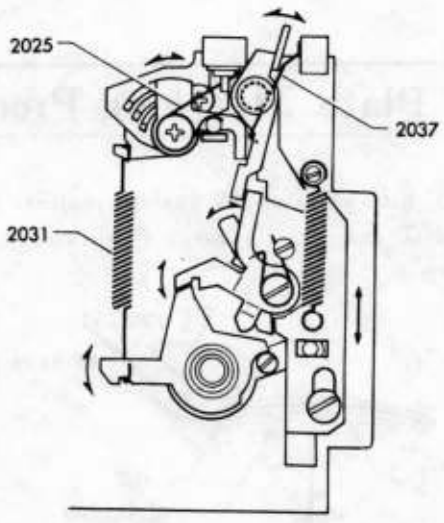


10 Front Base Plate-II



■Fig. 1

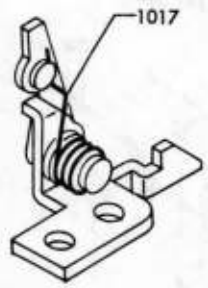
Check 2025, 2031, 2037, 2043 springs and the operation of each lever.



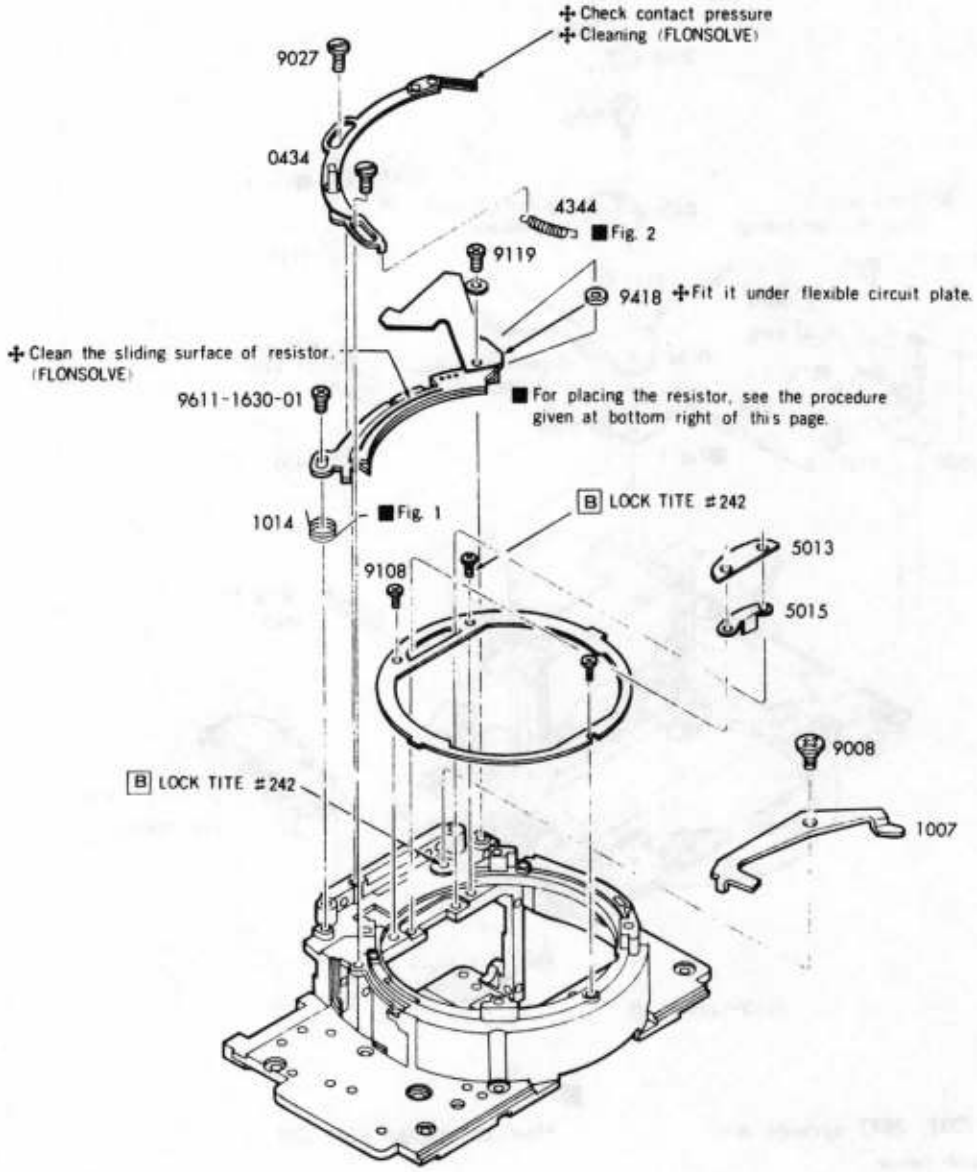
■Check the movement of each lever in the direction of the arrow.

■Fig. 2

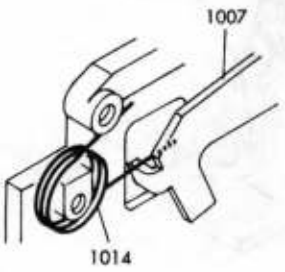
How to engage 5147 SP



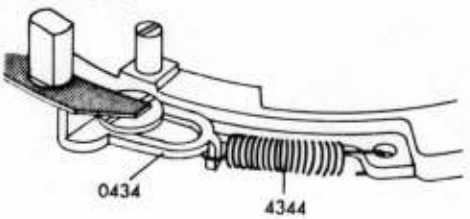
II Front Base Plate-III



■Fig. 1
How to engage 1014 SP

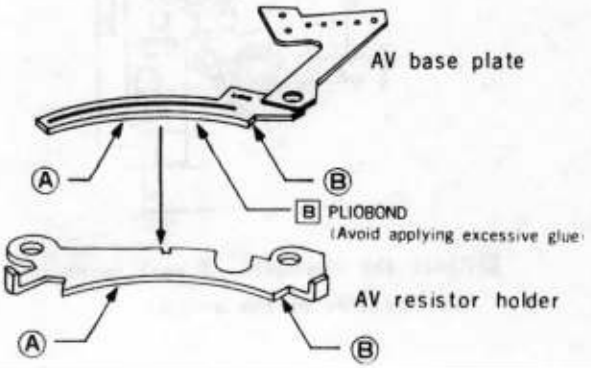


■Fig. 2
How to engage 4344 SP

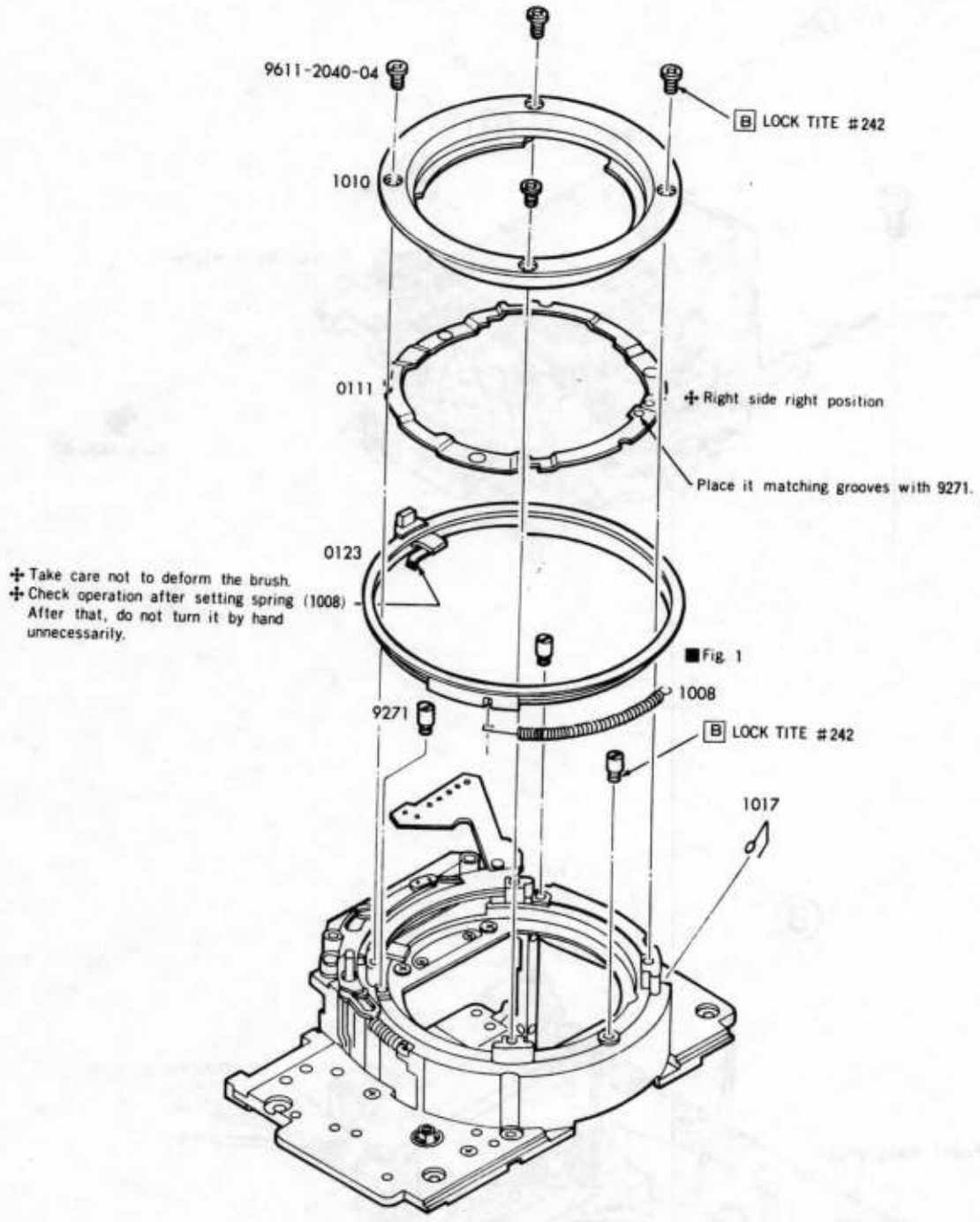


■AV Base Plate Attaching Procedure

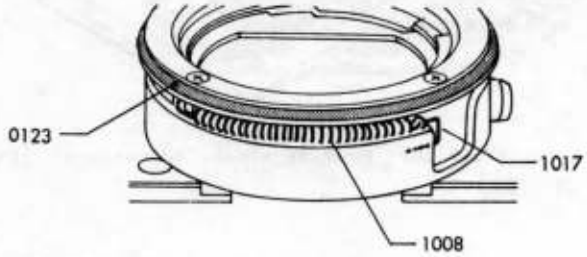
Mount the AV base plate on AV resistor holder, correctly matching arcs Ⓐ and straight parts Ⓑ with each other.



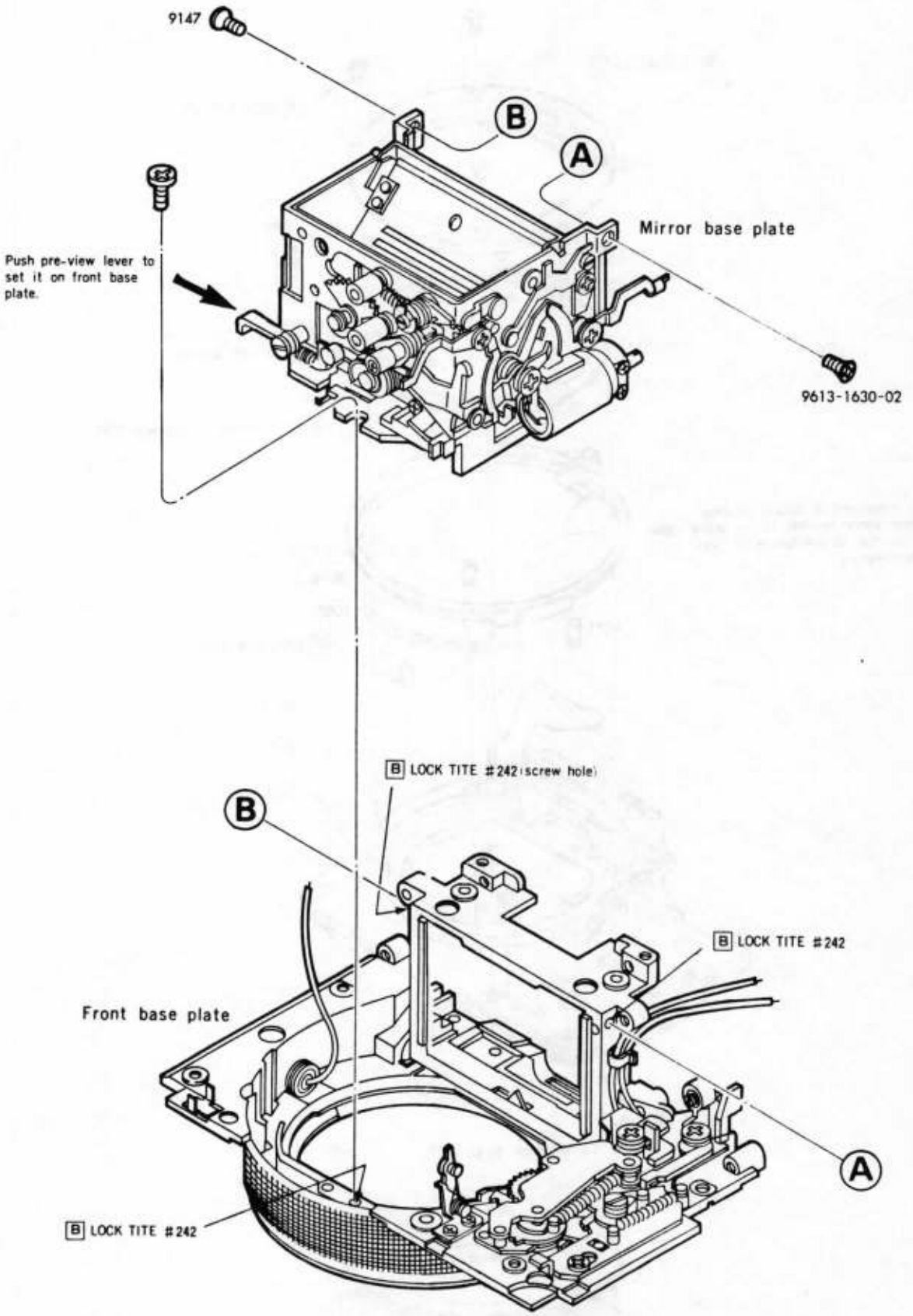
12 Front Base Plate-Ⅳ



■Fig. 1
How to engage 1018 SP



13 Front Base Plate Set (Mirror Base Plate and Front Base Plate)

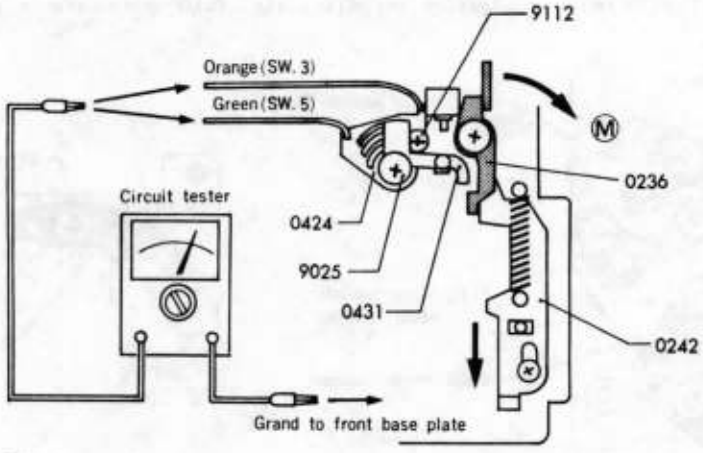


■After completing assembly, carry out the "Release stroke adjustment" (Page. 20) and "Mirror angle adjustment" (Pages. 21～22).

■ Release Stroke Adjustment

1 Adjust of SW.3 ON timing (magnetic release stroke)

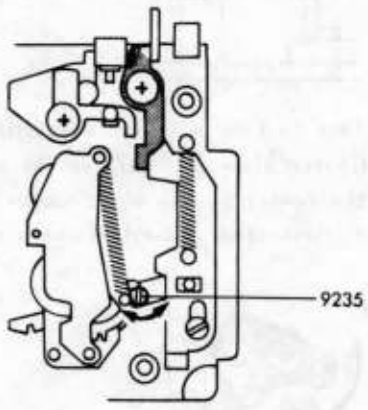
1. Loosen two set-screws (9025, 9112) and shift the position of main switch base plate (4324) so that SW.3 is turned ON when shutter release plate (0242) is depressed 1mm. Check it by observing the indication of the circuit tester.



Check: 1. SW.5 is ON when shutter release plate is depressed 0.4mm. (Check with circuit tester.)
2. Shutter release plate is stopped by release control lever (0236) when the plate is depressed 0.1~0.4mm after turning-on of SW.3.
3. When shutter release plate is pushed up by shifting down release control lever in the direction of Ⓜ, SW.3 is not turned ON as main switch (0431) is limited by release control lever. (Check with circuit tester.)

2 Release stroke adjustment

1. Charge the self-timer gear and MP return lever of mirror box, and fully depress the shutter release plate. Then make sure that the self-timer gear operates to raise the mirror.
2. If the mirror is not released, adjust it by turning eccentric pin (9235).



• Turn the eccentric pin little by little up to about 1/8 ~ 1/10 turn more beyond the position where the mirror is released by self-timer gear.

3 Checking of release stroke adjustment

Install the complete front base plate set into the body. Then check it by making the adjustment in accordance with the procedure in the "Exposure prevention timing adjustment" on page 34.

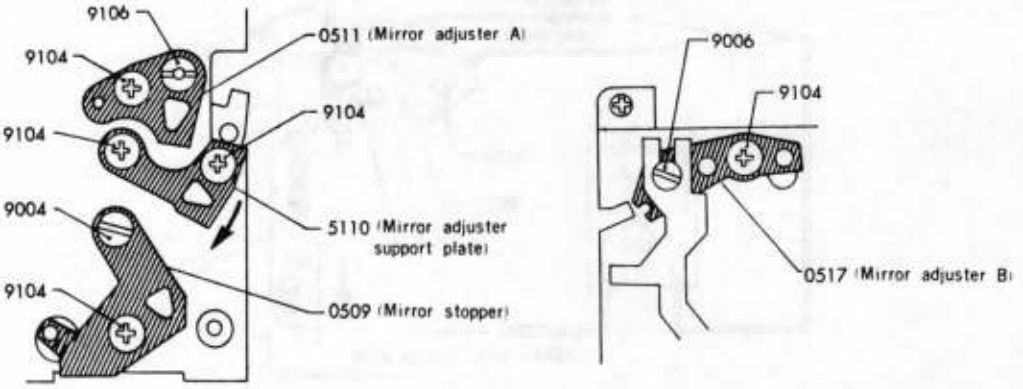
■ Mirror Angle Adjustment

■ Measuring instrument

: Mirror angle adjuster

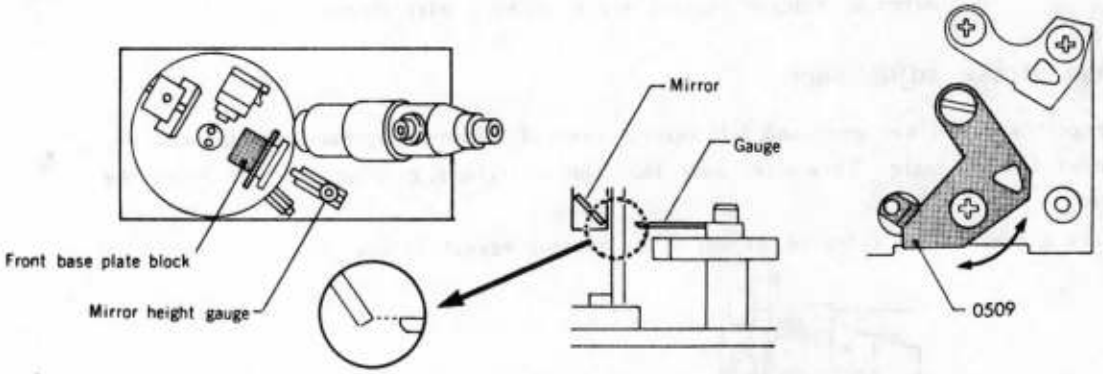
■ Preparation

Slightly loosen the set-screws of 0517 (mirror adjuster B) and 0511 (mirror adjuster A) respectively on the right and left sides of mirror box, 5110 (mirror adjuster support plate) and 0509 (mirror stopper), then set the front base plate block on the measuring instrument. At that time, shift 5110 (mirror adjuster support plate) fully downward in the direction of the arrow.

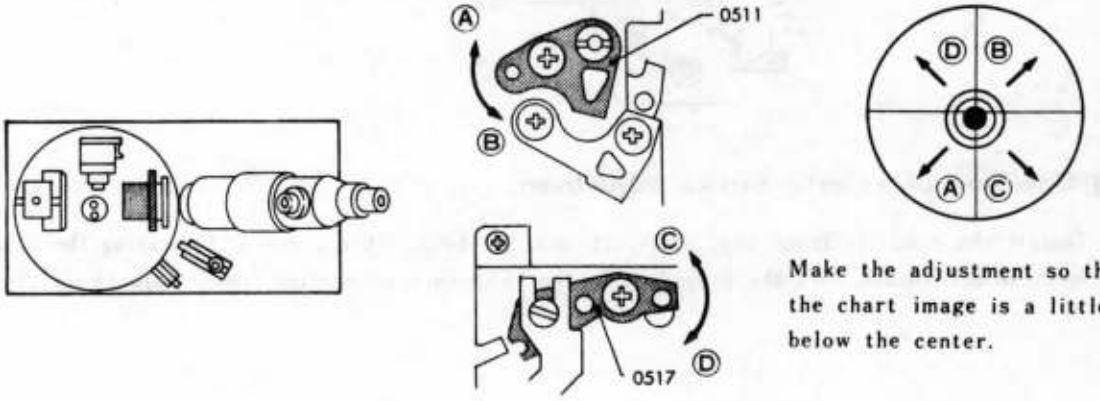


■ Adjusting procedure

1. Put the mirror height gauge face to face with the front base plate. Then adjust by moving mirror stopper (0509) in the arrow direction so that the height of gauge end visually matches the height of mirror end.
Finally, tighten up the set-screws.



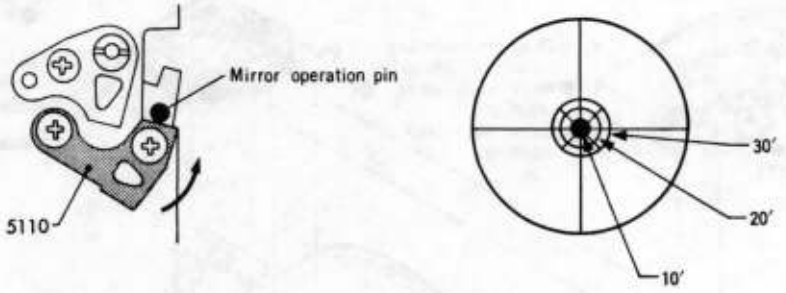
2. Next, put the front base plate block face to face with the autcollimator. Move mirror adjuster plate A (0511) and mirror adjuster plate B (0517) in the arrow direction while observing the autocollimator so that the center of the chart image comes to 2′ or 3′ lower than the center of the cross as illustrated. Finally tighten up the set-screws of 0511 and 0517.



Make the adjustment so that the chart image is a little below the center.

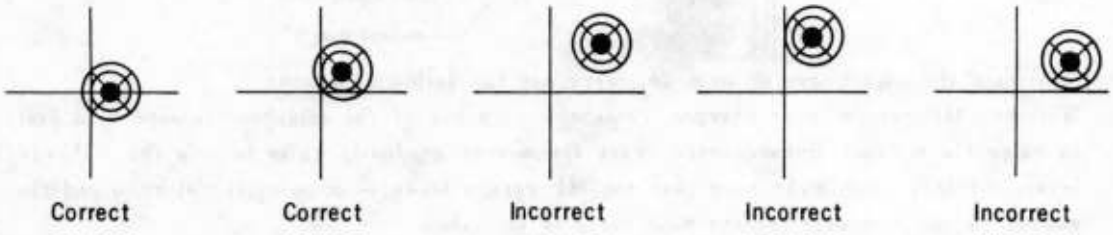
NOTE: When mirror adjuster plates A and B are moved in the directions of Ⓐ, Ⓑ, Ⓒ, Ⓓ, then the chart image moves respectively in the directions of Ⓐ, Ⓑ, Ⓒ, Ⓓ.

3. Next, slowly push up 5110 (mirror adjuster support plate) in the arrow direction up to the mirror operation pin. Then adjust 5110 so that the chart image center comes to the cross center while observing the autocollimator. Finally, tighten up the set-screws.



After the above adjustment, check that the height of gauge end matches the height of mirror end with use of the mirror height gauge. If it is deflected, repeat the adjustments in 1~3.

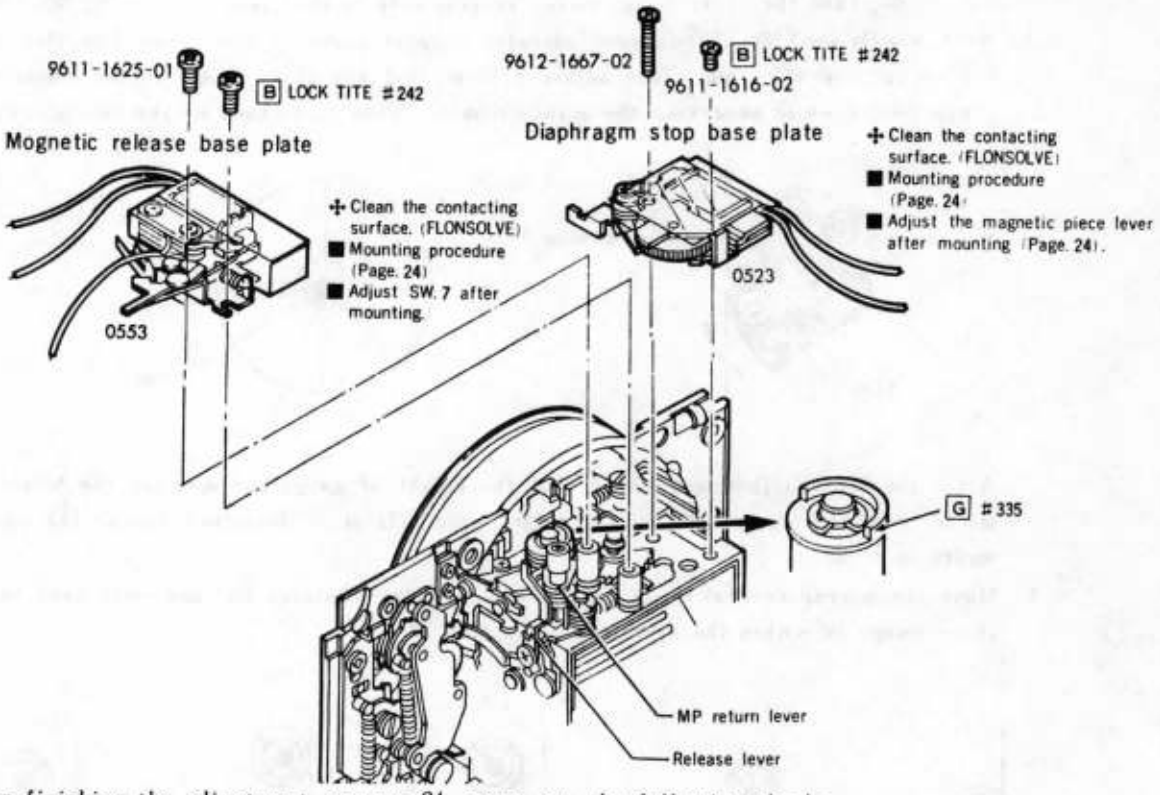
4. Move the mirror several times from the rear side of mirror box and make sure that the chart image is within the specified value **45°±20′**.



5. Attach SCREW LOCK G to the head of each set-screw of 0511, 5110, 0509 and 0517, except set-screw 9006 of 0517.

[14] Diaphragm Stop Base Plate and Magnetic Release Base Plate

■ Carry out the checks given below, beforehand and first mount the diaphragm stop base plate.

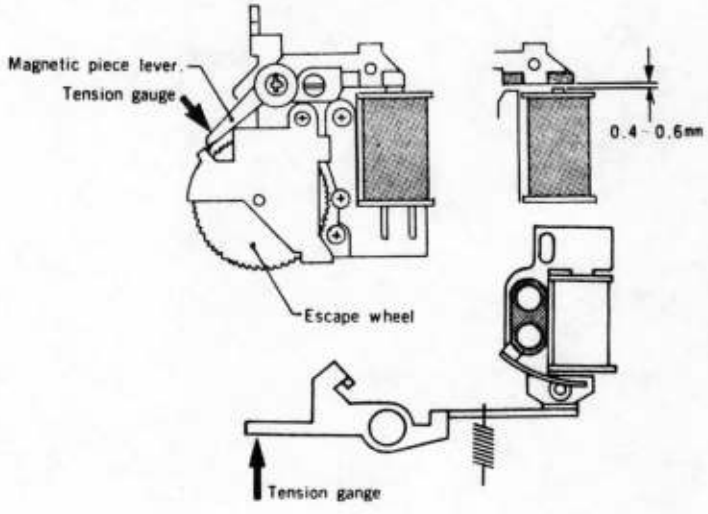


■ After finishing the adjustment on page. 24, carry out the following checks.

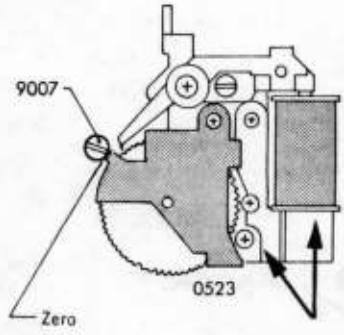
1. With the MP return lever charged, release the magnet of the magnetic release base plate to raise the mirror. Subsequently, reset the mirror gradually while holding the MP return lever. At that time, make sure that the MP return lever is completely returned and the magnet of the magnetic release base plate is activated.
2. When the mirror is reset with the preset lever manually fixed at minimum diaphragm position, the mirror should be exactly stopped.

■ Diaphragm Stop Base Plate and Magnetic Release Base Plate Checking Procedure.

1. Diaphragm stop base plate
   - When the magnet is being released, the clearance between magnetic piece and core should be 0.4~0.6mm.
   - The escape wheel should move smoothly and without noise when turned by hand.
   - When the magnet is being activated, apply a tension gauge to the tip of magnetic piece lever (arrow-marked in the illustration at right) and make sure the magnetic attraction is 70g or over.
2. Magnetic release base plate.
   - When the magnet is activated, apply a tension gauge to the tip of magnetic release lever (arrow-marked in the illustration at right) and make sure the magnetic attraction is 120g or over.

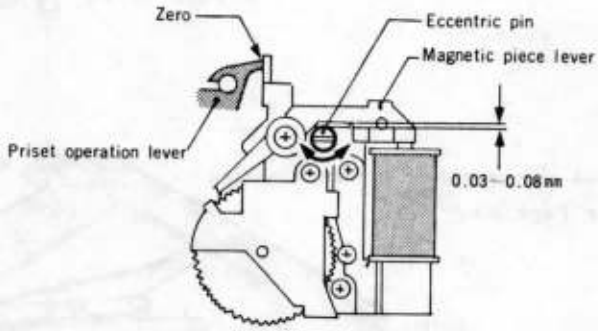


■ Diaphram Stop Base Plate Mounting Procedure



Charge and then release the MP return lever to raise the mirror. Then push diaphragm stop base plate (0523) in the arrow direction to make zero the clearance between preset lever axis (9007) and 0523, then tighten up the screw at that position.

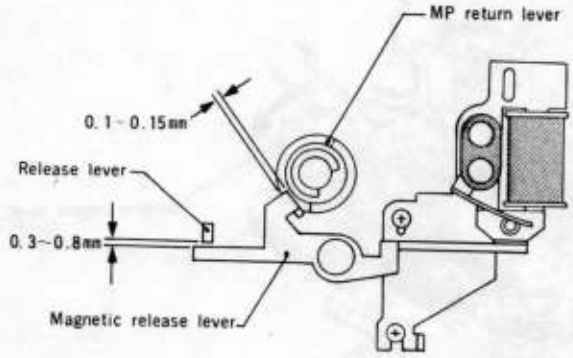
■ Magnetic Piece Lever Adjustment



With the MP return lever charged, turn the eccentric pin so that the clearance between the pin and the magnetic piece lever becomes **0.03~0.08mm.**

- Make sure that the eccentric pin moves **0.03~0.08mm** towards the magnetic piece lever when the lever is being released.
- When the lever is being charged, the clearance between preset operation lever and magnetic piece lever should be zero.
- When the mirror is reset after releasing the MP return lever and the magnet, the magnet should be activated.

■ Magnetic Release Base Plate Mounting Procedure

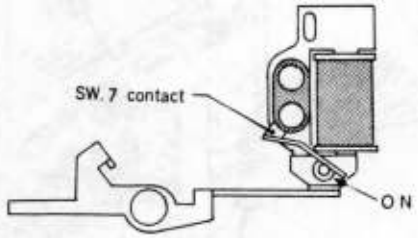


With the magnet activated and MP return lever charged, set the magnetic release lever in such a position that the lever tip is **0.1~0.15mm** inside the MP return lever.

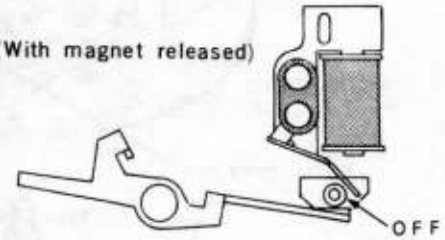
- After mounting, make sure that the clearance between magnetic release lever and release lever is **0.3~0.8mm.**

■ Adjustment of SW.7

(With mirror reset)

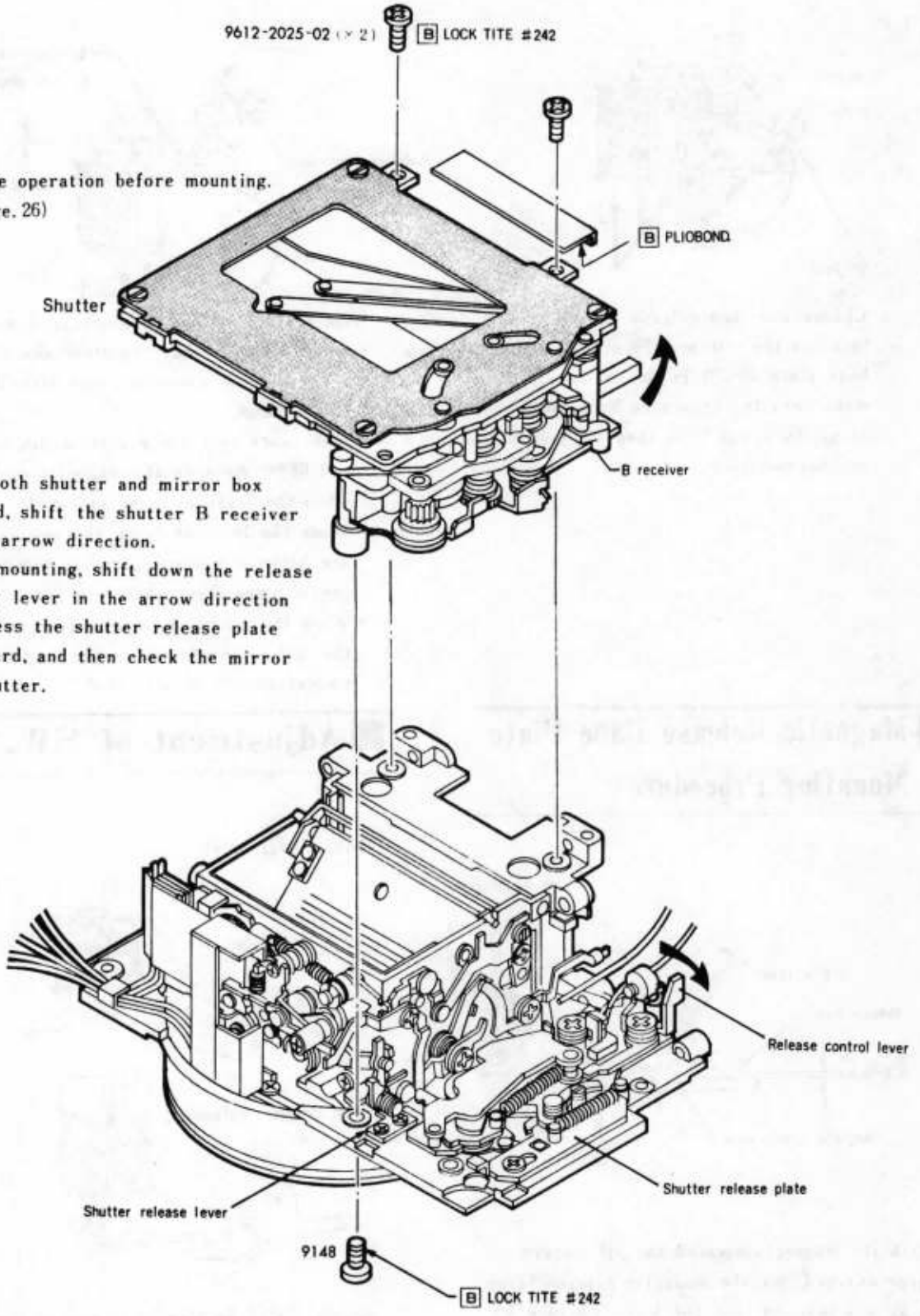


(With magnet released)



Adjust SW.7 by bending the contact so that the switch is OFF with the magnet released and ON with the mirror reset.

15 Shutter Block



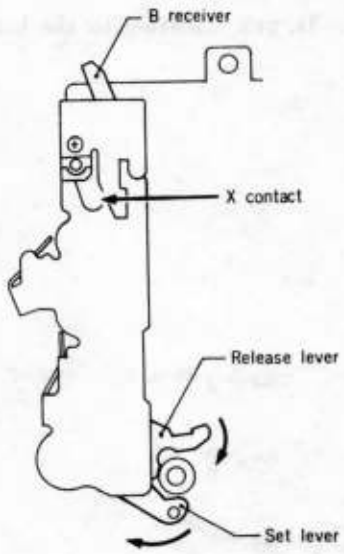
■Check the operation before mounting. (See Page. 26)

■With both shutter and mirror box charged, shift the shutter B receiver in the arrow direction.

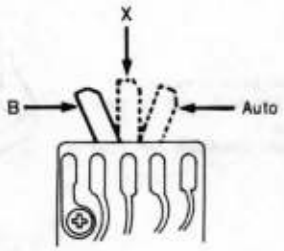
■After mounting, shift down the release control lever in the arrow direction and press the shutter release plate downward, and then check the mirror and shutter.

■After mounting the shutter, carry out the "Shutter release position checking" (See Page. 26) and arrange the leads neatly.

■ Shutter Block Operation Checking



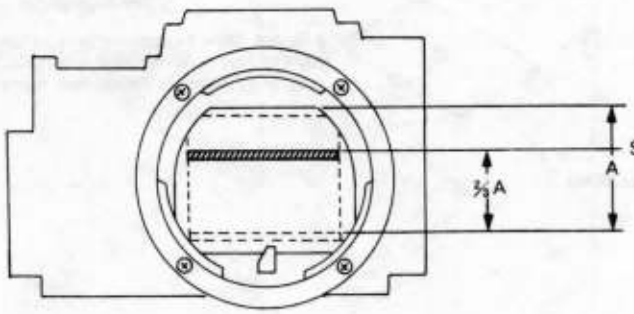
1. Charge the shutter by pushing the set lever in the arrow direction and shift the release lever upwards. Then the shutter operates.
2. Visually check that the shutter speed changes to B, X (1/100 sec.) or AUTO (approx. 1/1400~1500 sec.) in accordance with the position of B receiver.

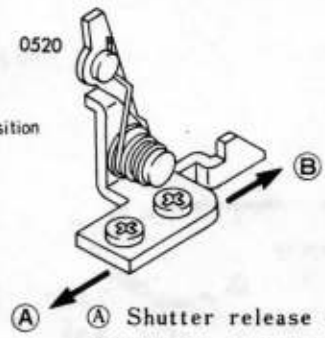


3. Check the contact of X contact.

■ Shutter Release Position Checking

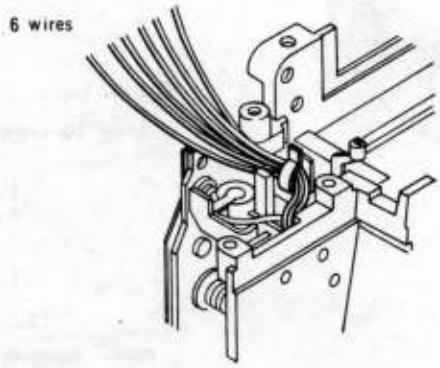
1. With both shutter and mirror box charged, hold the mirror end by hand taking care not to leave fingerprints, release the shutter by release plate and then raise the mirror gradually.
2. Check that the shutter operates when the mirror reaches 2/3 of its vertical stroke. If the shutter release too early or too late, remove the shutter and adjust the position of shutter release base plate (0520).





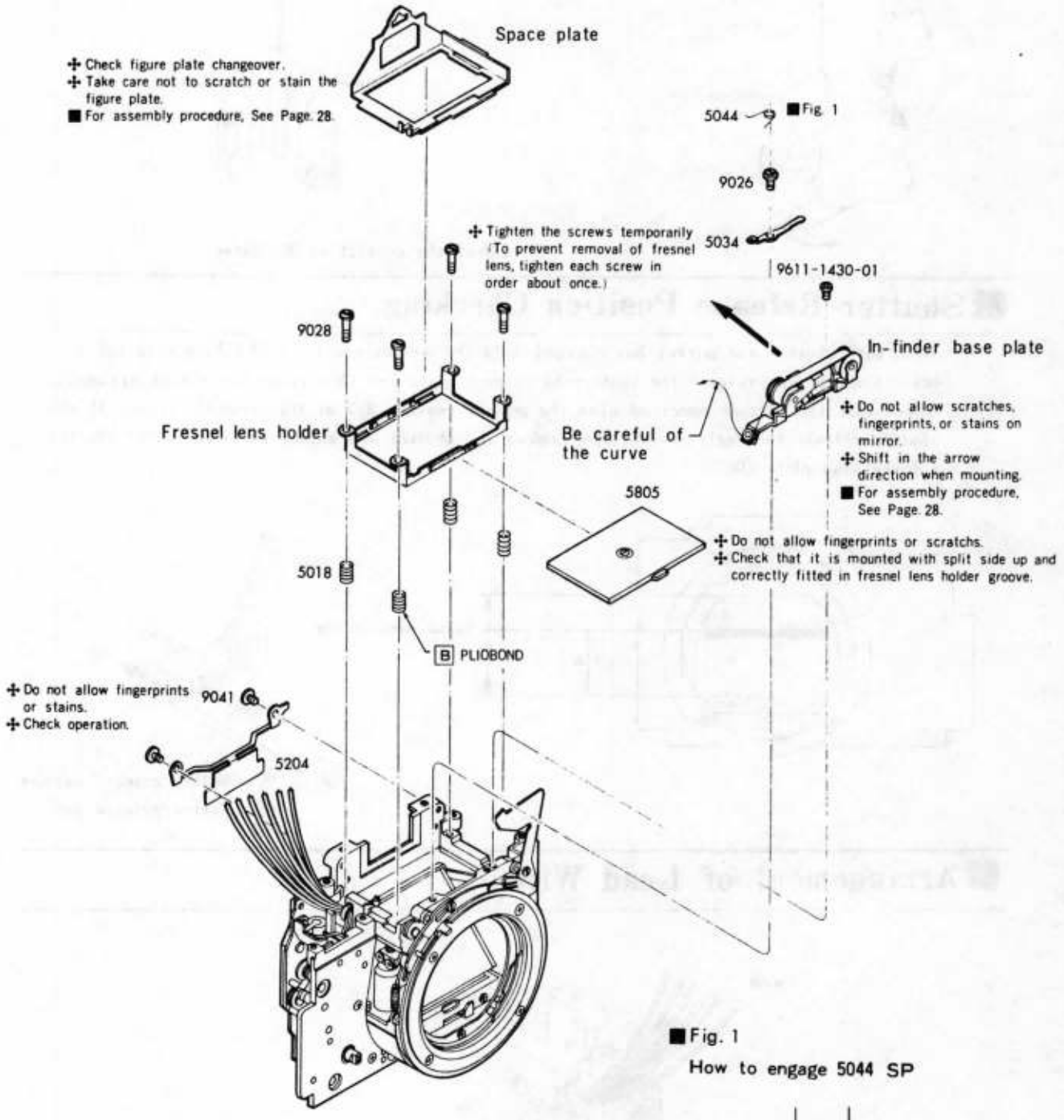
Ⓐ Shutter release earlier
Ⓑ Shutter release later

■ Arrangement of Lead Wires



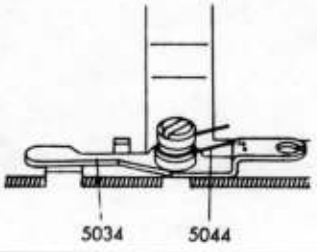
16 Fresnel Lens Holder, Space Plate and In-Finder Base Plate

✣ When carrying out the assembly and adjustments on Pages. 27～31, pay attention to the bend of MP return lever under mirror base plate.


Space plate
✣ Check figure plate changeover.
✣ Take care not to scratch or stain the figure plate.
■ For assembly procedure, See Page. 28.
5044
■ Fig. 1
9026
5034
✣ Tighten the screws temporarily (To prevent removal of fresnel lens, tighten each screw in order about once.)
9611-1430-01
9028
In-finder base plate
Fresnel lens holder
Be careful of the curve
✣ Do not allow scratches, fingerprints, or stains on mirror.
✣ Shift in the arrow direction when mounting.
■ For assembly procedure, See Page. 28.
5805
✣ Do not allow fingerprints or scratchs.
✣ Check that it is mounted with split side up and correctly fitted in fresnel lens holder groove.
5018
B PLIOBOND
✣ Do not allow fingerprints or stains.
✣ Check operation.
9041
5204

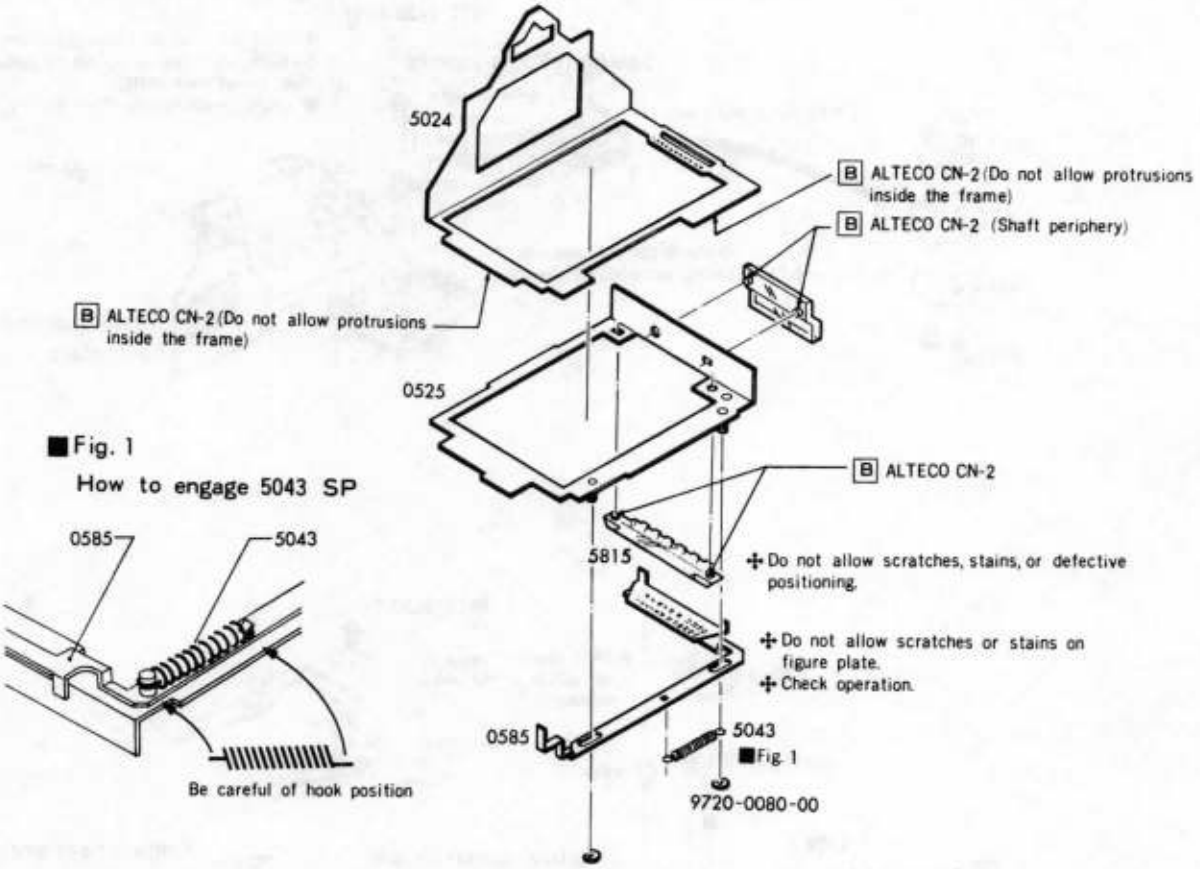
■ Fig. 1

How to engage 5044 SP



■ Space Plate Assembly

■ Use the minimum necessary amount of glue; avoid excessive application.

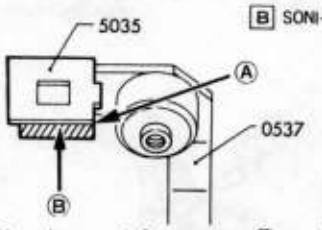

5024
B ALTECO CN-2 (Do not allow protrusions inside the frame)
B ALTECO CN-2 (Shaft periphery)
B ALTECO CN-2 (Do not allow protrusions inside the frame)
0525
B ALTECO CN-2
5815
✣ Do not allow scratches, stains, or defective positioning.
✣ Do not allow scratches or stains on figure plate.
✣ Check operation.
0585
5043
■ Fig. 1
9720-0080-00

■ Fig. 1
How to engage 5043 SP

■ In-Finder Base Plate Assembly

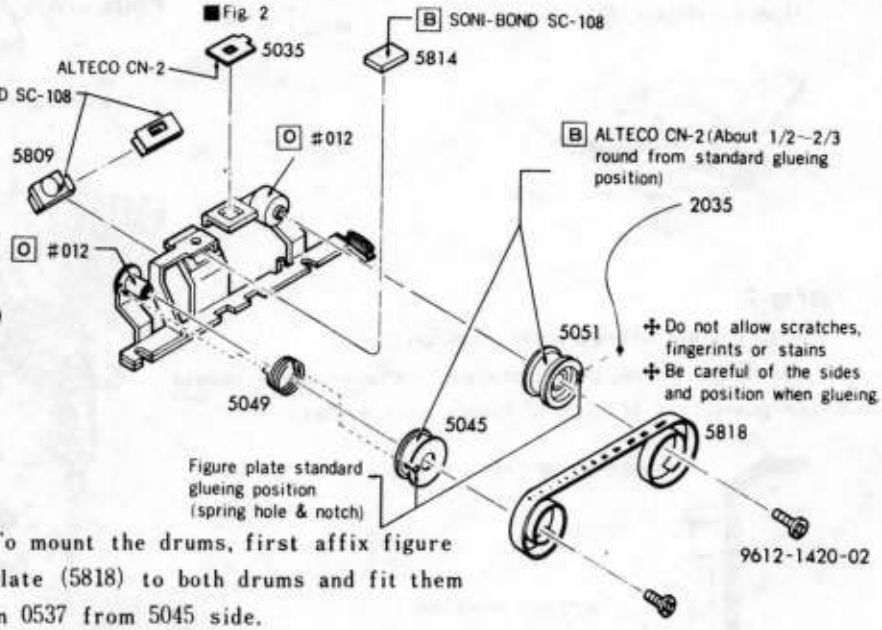
■ Use the minimum necessary amount of glue; avoid excessive application.

■ Fig. 2
Glueing position 5035

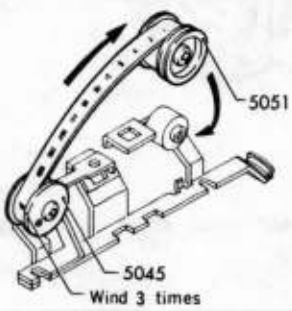


Match straight parts Ⓐ and Ⓑ to each other when glueing.

■ Fig. 2

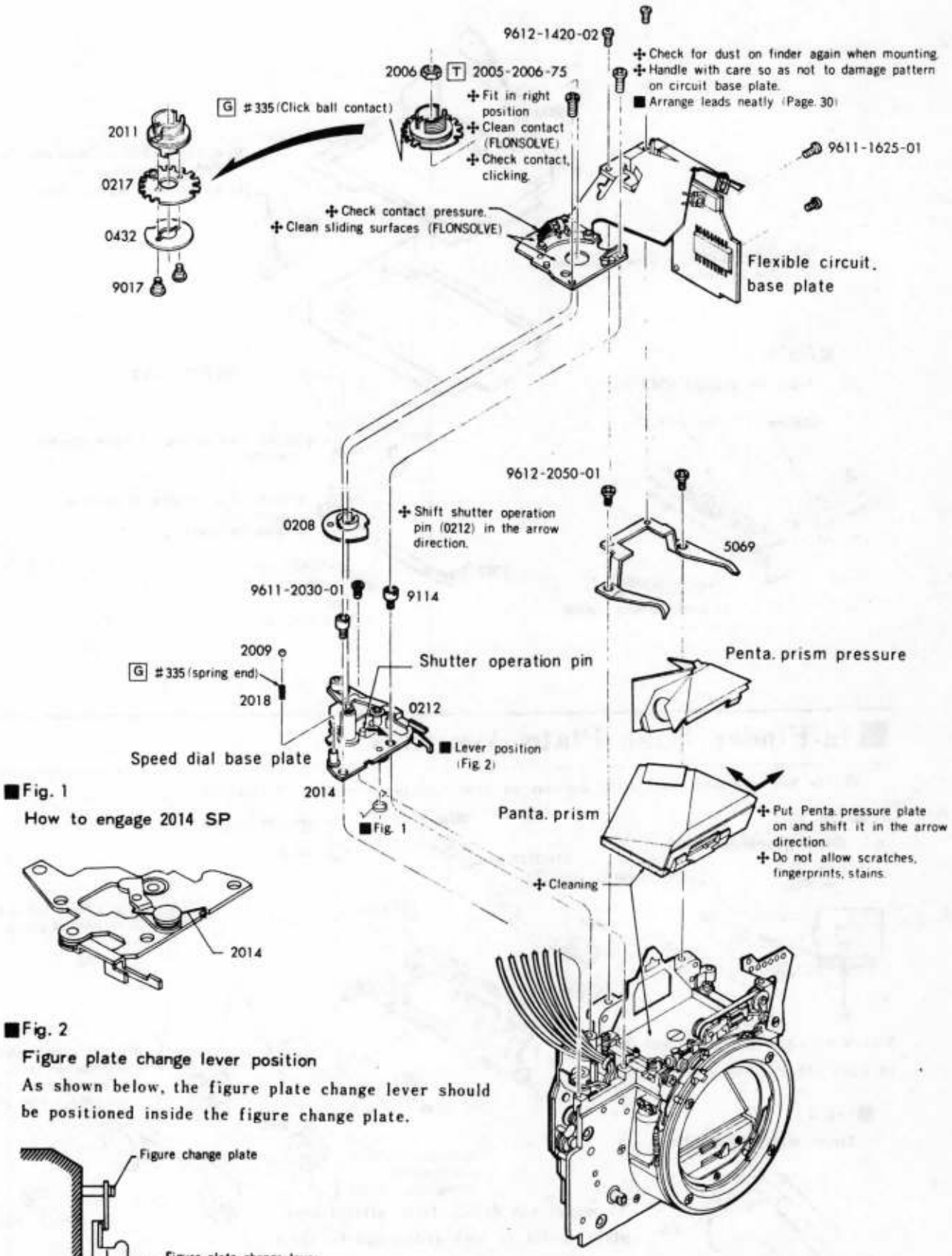


■ Fig. 3
Drum mounting method



To mount the drums, first affix figure plate (5818) to both drums and fit them in 0537 from 5045 side.
Wind the figure plate onto 5045 3 times, then pull 5051 (to check spring strength) and slip it onto the shaft in the opposite position.

[17] Penta. Prism, Speed Dial Base Plate and Flexible Circuit Base Plate



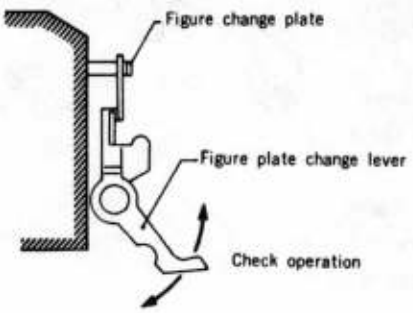
■ Fig. 1

How to engage 2014 SP

■ Fig. 2

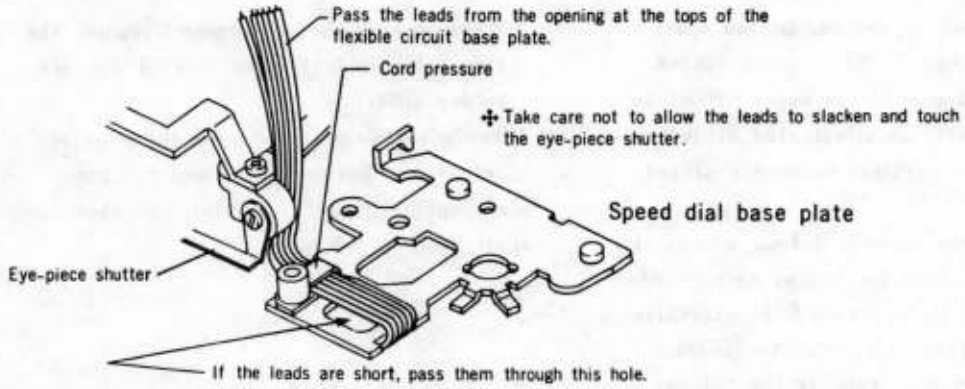
Figure plate change lever position

As shown below, the figure plate change lever should be positioned inside the figure change plate.

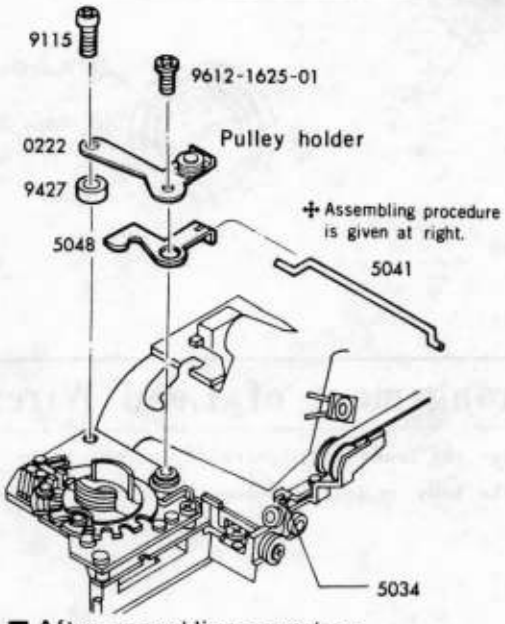


■ Adjust the figure plate change lever after installing it in the body. (See Page. 33.)

■ Arrangement of Lead Wires


Pass the leads from the opening at the tops of the flexible circuit base plate.
Cord pressure
✣ Take care not to allow the leads to slacken and touch the eye-piece shutter.
Speed dial base plate
Eye-piece shutter
If the leads are short, pass them through this hole.

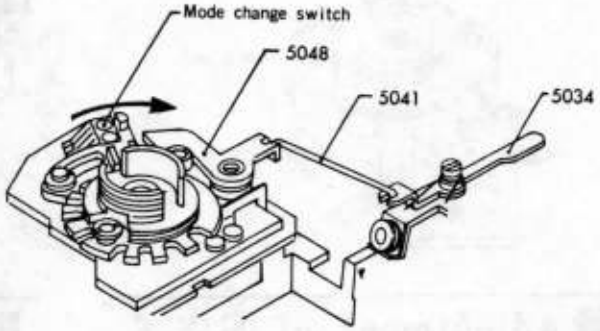
[18] Pulley Holder



■ After assembling procedure:

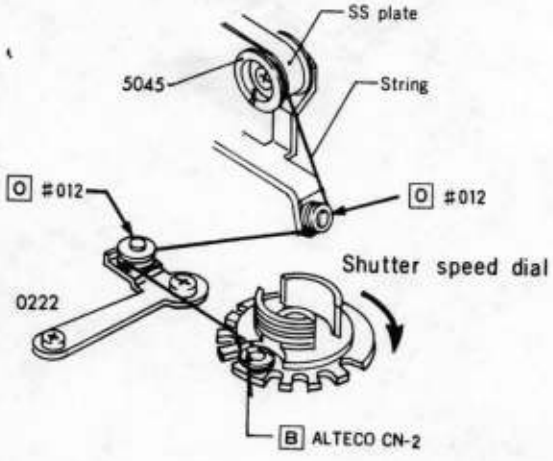
1. SS in-finder string setting (below)
2. Shutter button adjustment (Page. 31)

■ 5041 Mounting Procedure



1. Fit the bends of 5041 in 5034 and 5048.
2. Shift mode change switch in the arrow direction and set 5048 onto the shaft.
3. Check 5034 by shifting mode change switch after assembling procedure given at left.

■ Engagemnt of Designation String

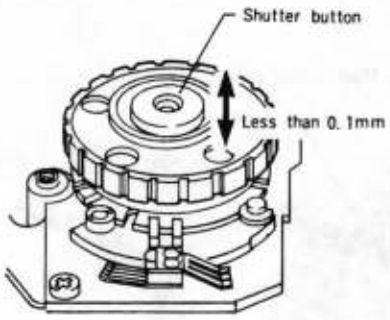


1. Set shutter dial to "0" (with the dial completely turned in the arrow direction.
2. With the SS plate returned by spring, wind string (2035) in the groove of drum (5045) about 2.5 times and thus set the string while pulling it as illustrated.
3. Check the SS plate for operation and the string for running off the track by rotating the shutter dial.

■ Adjust the SS in-finder after installing it in the body. (See Page. 34.)

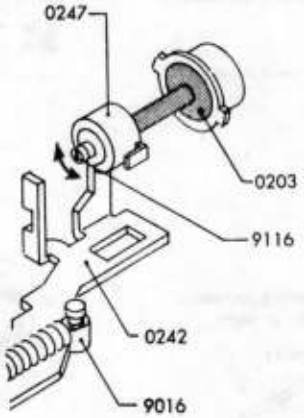
■ Shutter Button Adjustment

1. Temporarily set up release button shaft (0203), speed dial (1339), release button (0201), and release button sheet (2004) to make an assembly as illustrated at left. Then check the vertical looseness of release button.
2. If the looseness exceeds 0.1mm, adjust it to less than 0.1mm by turning release adjuster (9116). Do not turn 9116 excessively, otherwise shutter release plate (0242) is forced down by 0203 causing the release stroke to become wrong.

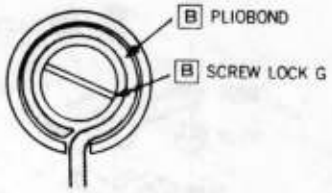


- When making the adjustment, remove the glue sticking to remote-control contact holder (0247).

3. After adjustment, make sure there exists no clearance between 0242 and release plate spring hanger A (9016), and then apply glue to the parts.

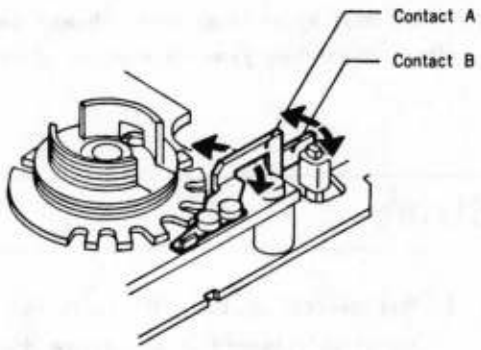


■ Glueing after adjustment

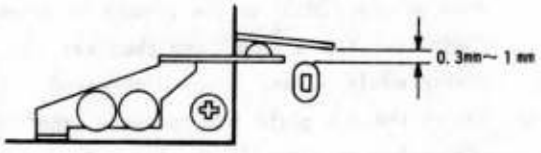


■ Adjustment of SW.6

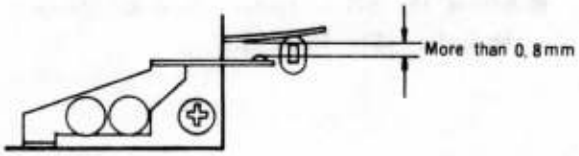
Adjust SW.6 by bending contacts A and B as illustrated below.



■ With mirror charged (SW.6 ON)



■ With mirror up (SW.6 OFF, Check with B)



■ Arrangement of Lead Wires

Arrange the leads as illustrated and put them into the body as instructed on Page.32.

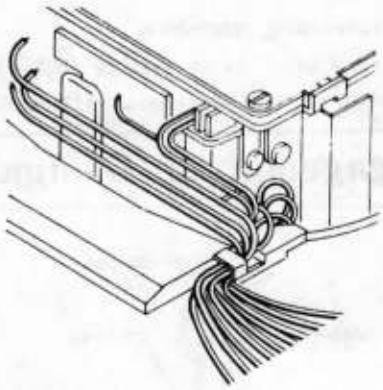
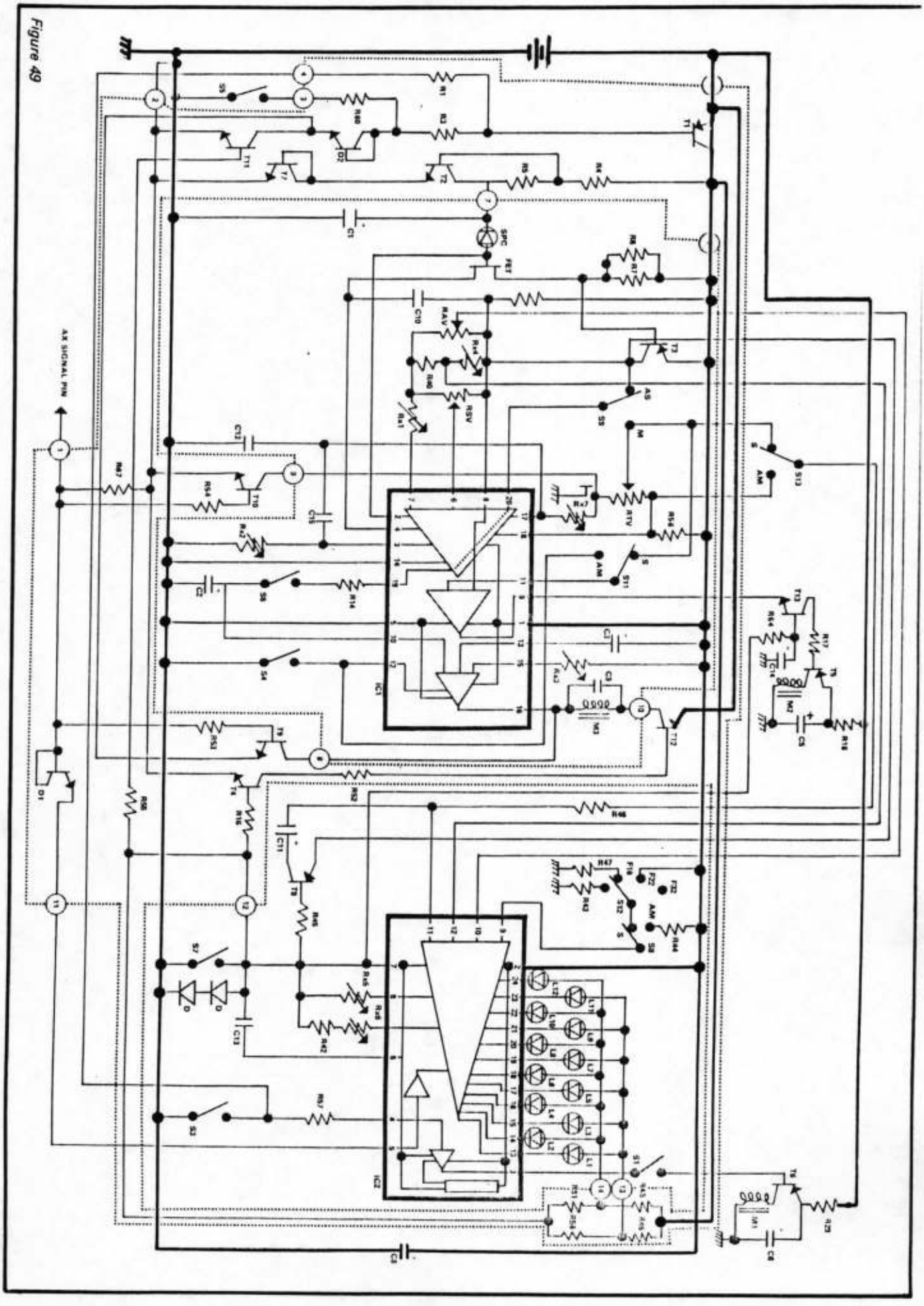


Figure 49


AX SIGNAL PIN
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FET
RAV
RSV
RTV
AM
S
M
IC1
IC2
T1
T2
T3
T4
T5
T6
T7
T8
T9
T10
T11
T12
D1
D2
S1
S2
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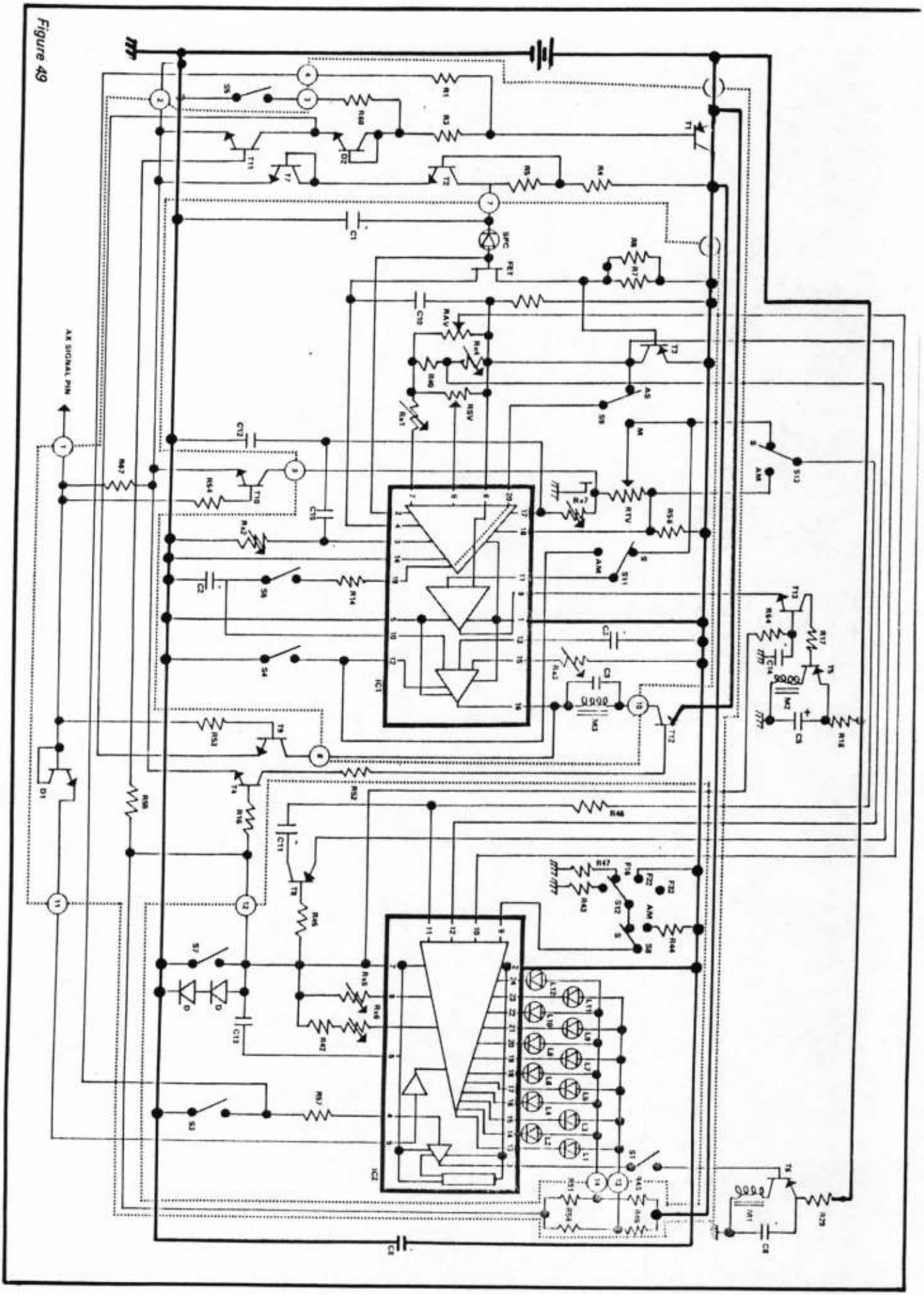
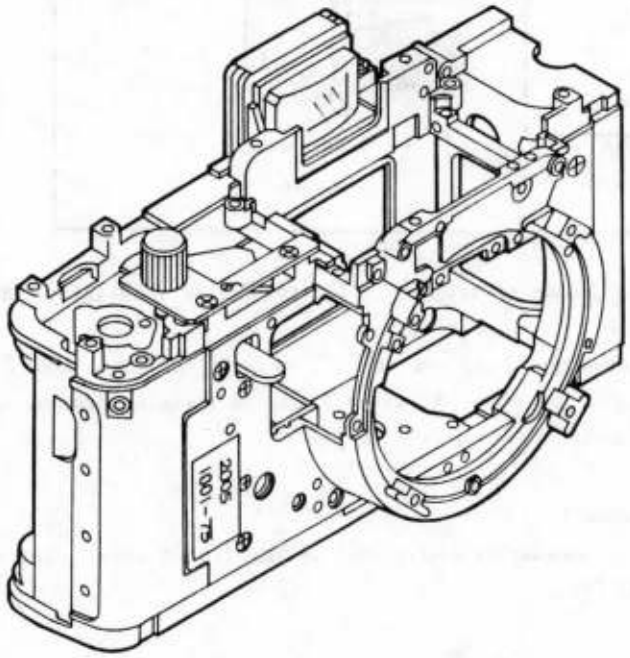
Figure 49



■ Measuring Instruments and Special tool

■Measuring Instruments : Camera standard tester 〈Model ST-5101〉

■Special tool : Temporary body 〈2005-1001-75〉



■ Sub Materials

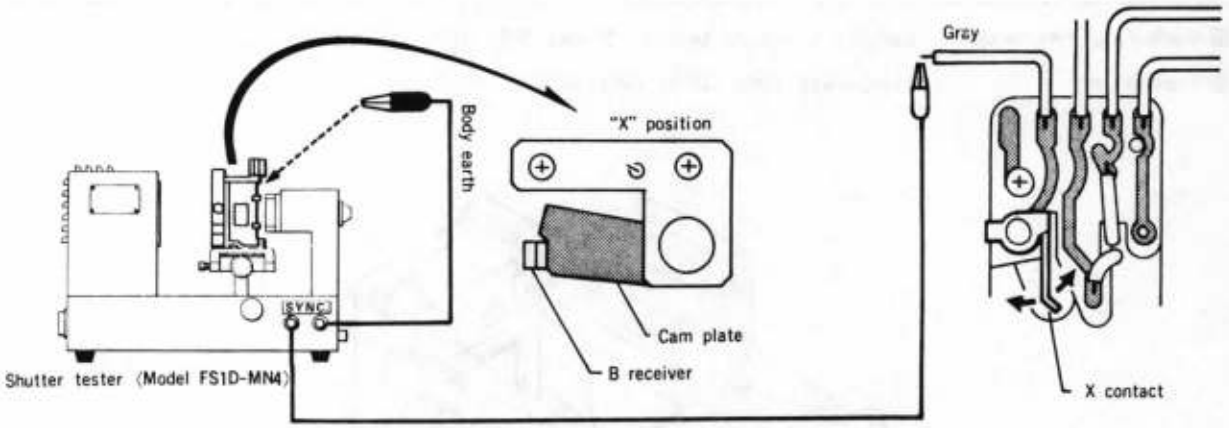
■Grease

- #004
- TUNGMIC

■Binding Agent

- Screw lock G

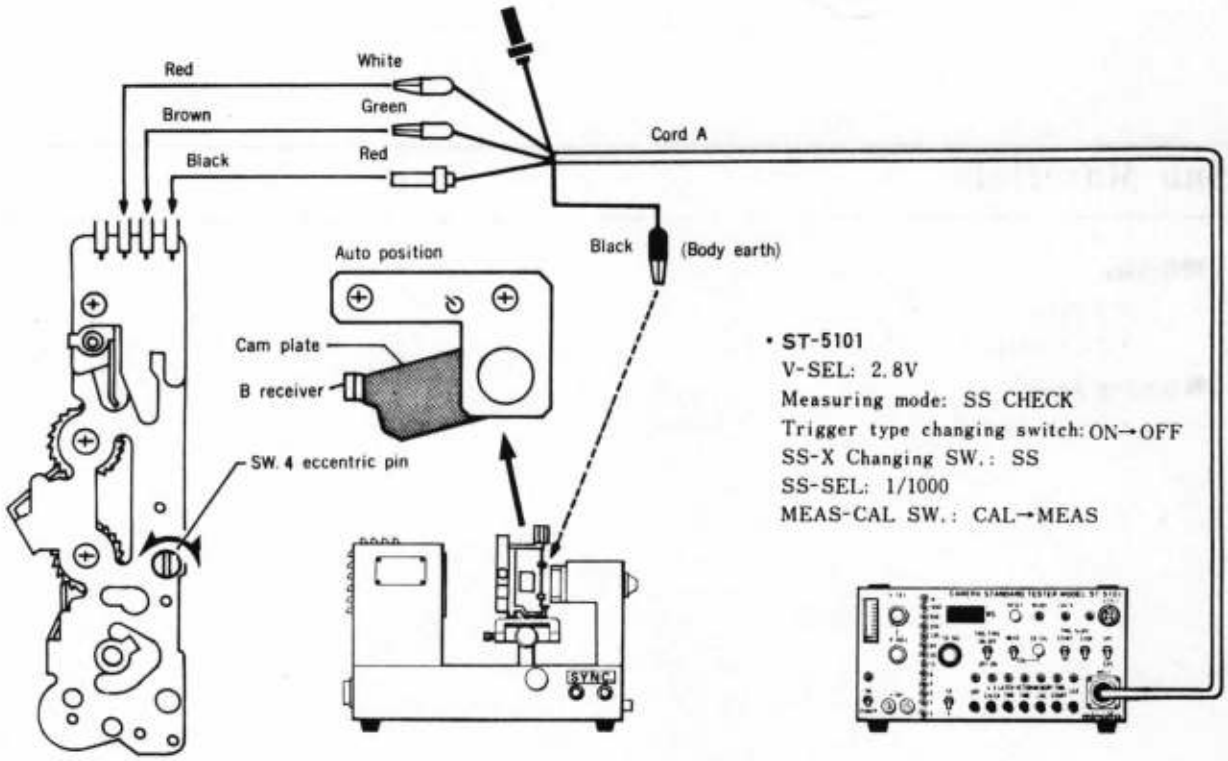
2 Synchro "X" time lag adjustment



1. Ground synchro cord ⊕ side of shutter tester to shutter lead (gray), and synchro ⊖ side to temporary body.
2. With cam plate of temporary body set at "X", measure "X" time lag. Range A···0.3 ms or over, range B···2.3 ms or over. Adjustment can be made by bending X contact piece of printed circuit board.

3 Shutter speed adjustment

1. Set temporary body and measuring instrument as illustrated above. Set cam plate of temporary body to "AUTO".

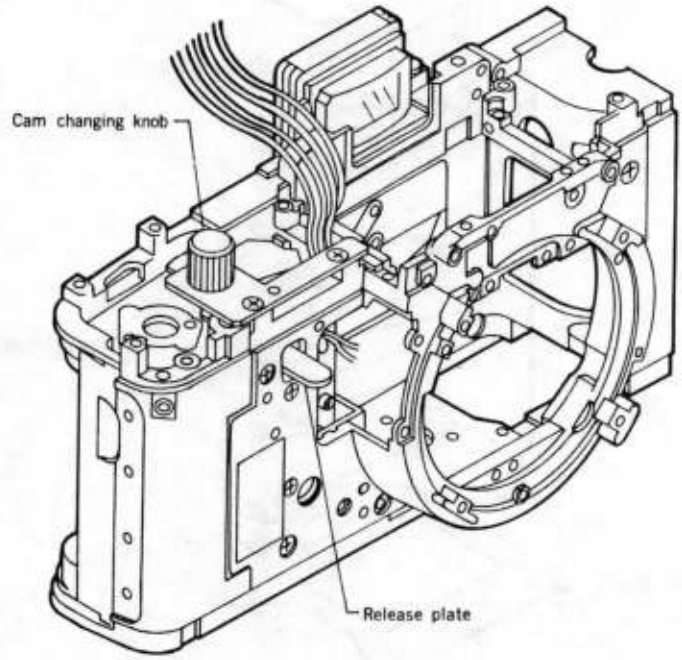


2. Set SS-SEL SW. of camera standard tester to 1/1000, and check that counter indication is 0.98 ms by SS-CAL SW.
3. Release the shutter and make the adjustment by turning SW.4 eccentric pin so that the shutter tester indication approaches to 0.98 ms. When there is an extreme variation of shutter tester indication: Check each lever and shutter blade operation, second curtain disengagement, SW.4, etc.

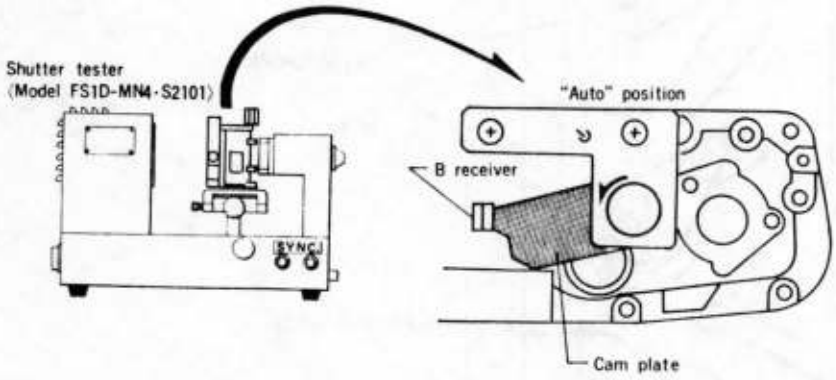
■ Shutter Block Adjustment

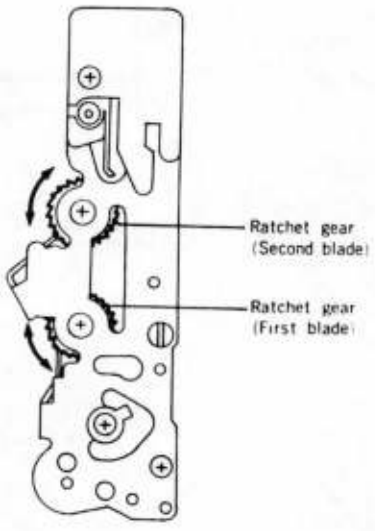
■ Measuring Instruments : Camera standard tester 〈Model ST-5101〉
: Shutter tester 〈Model FS1D-MN4·S2101〉
: Temporary body 〈2005-1001-75〉

■ Requir : Attach shutter to temporary body as illustrated below.



1 Curtain speed adjustment



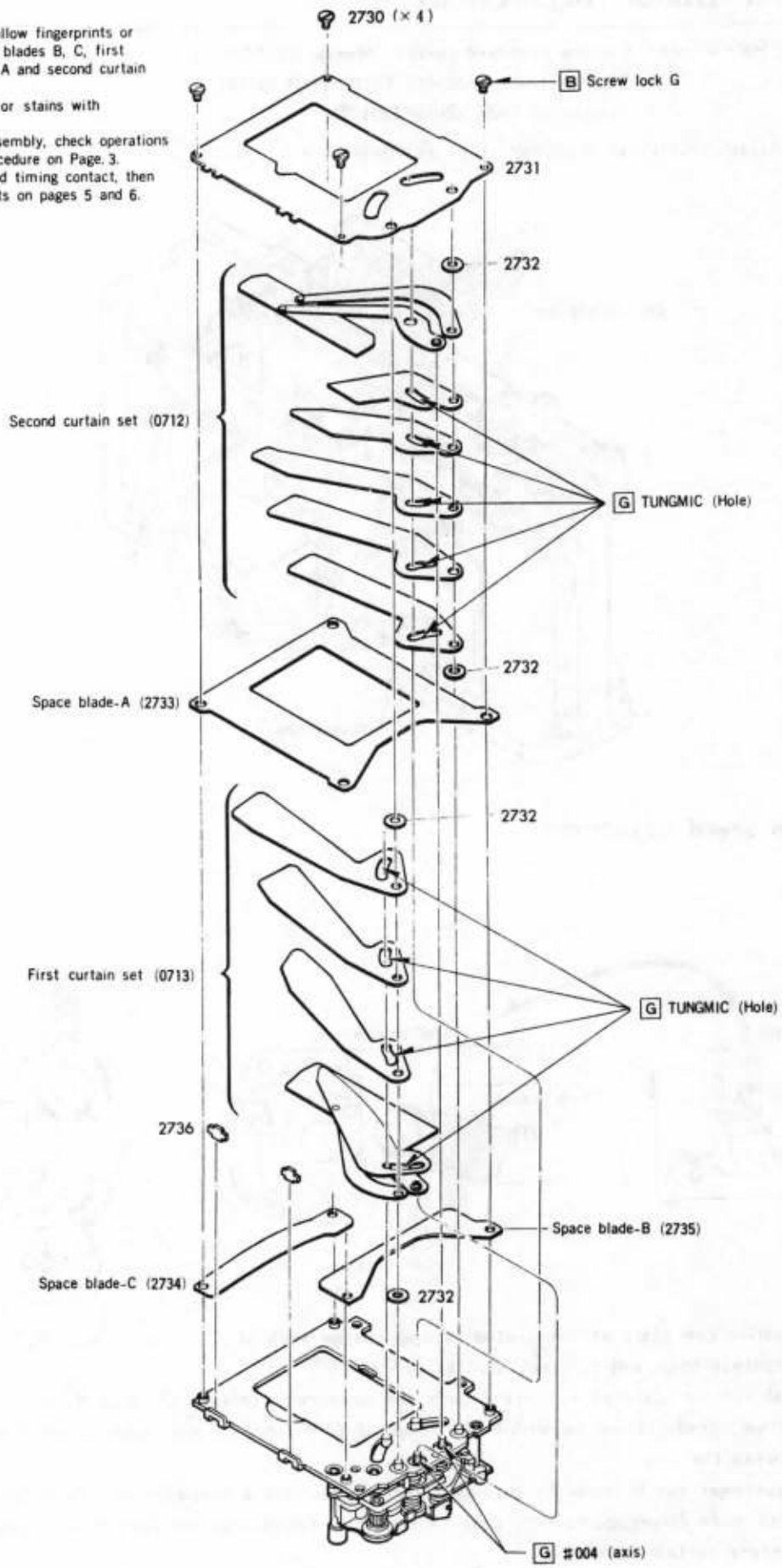


1. Position cam plate as illustrated by cam change knob of temporary body, and then set shutter to "AUTO".
2. Push release plate of temporary body and measure curtain speed. Both first and second curtain speeds should be within the range of 6~6.5 ms (21 mm) without difference between the two.
3. Adjustment can be made by turning ratchet gear with a screwdriver. To reduce curtain speed, once disengage ratchet gear to return it completely and then slowly turn it to increase curtain speed.

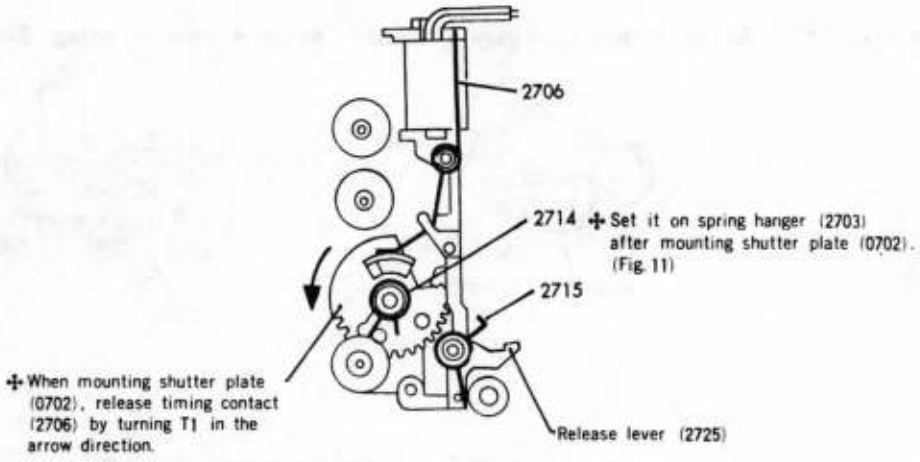
■ Shutter Assembly Ⅱ

✣ Taking care not to allow fingerprints or stains, mount space blades B, C, first curtain, space blade A and second curtain in this order.

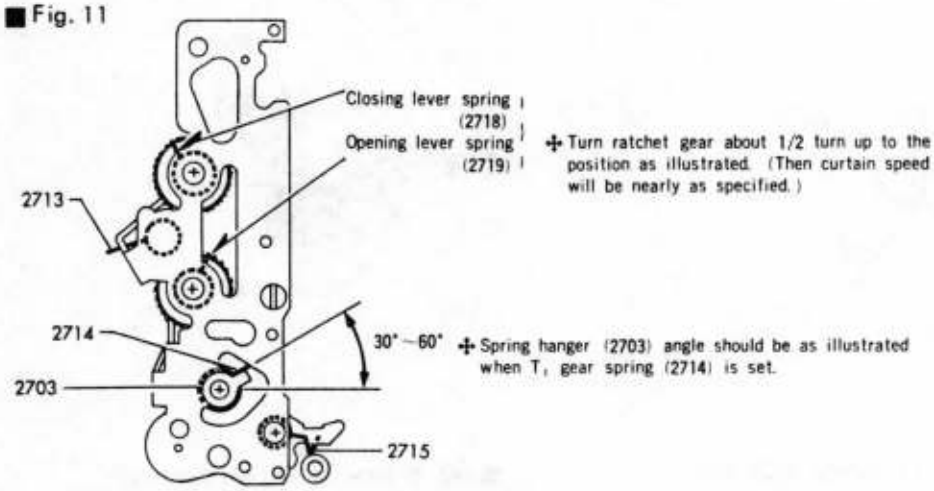
✣ Remove fingerprints or stains with FLONSOLVE.
After completing assembly, check operations according to the procedure on Page. 3.
Solder lead wires and timing contact, then make the adjustments on pages 5 and 6.



■ Fig. 10


2706
2714
✣ Set it on spring hanger (2703) after mounting shutter plate (0702). (Fig. 11)
2715
✣ When mounting shutter plate (0702), release timing contact (2706) by turning T1 in the arrow direction.
Release lever (2725)

■ Fig. 11


Closing lever spring (2718)
Opening lever spring (2719)
✣ Turn ratchet gear about 1/2 turn up to the position as illustrated. (Then curtain speed will be nearly as specified.)
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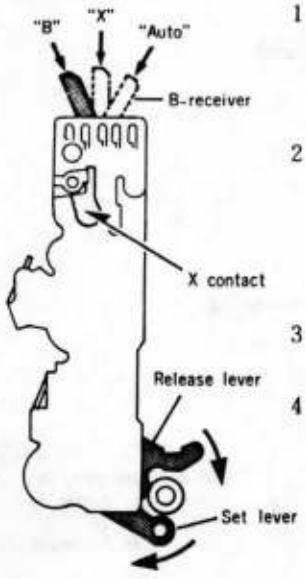
30° – 60°
✣ Spring hanger (2703) angle should be as illustrated when T1 gear spring (2714) is set.
2703
2715

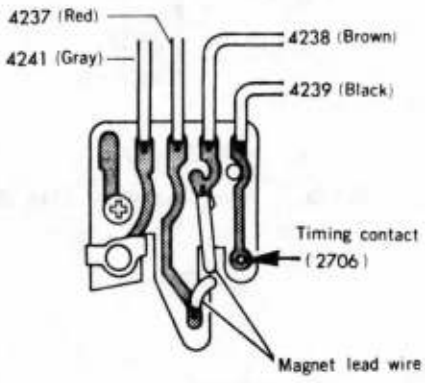
■ Shutter block operation checking



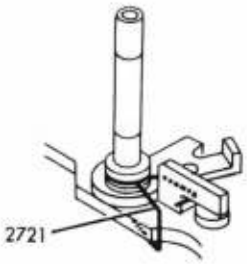
1. Push the set-lever in the arrow direction to charge the shutter and push the release lever. Then the shutter should operate.
2. Shutter speed should shift to "B", "X" (about 1/100 sec.) or "AUTO" (high speed) according to the position of B receiver. (Check visually)
3. No noise should be created when shutter is operated.
4. Check "X" contact.

■ Soldering printed base plate

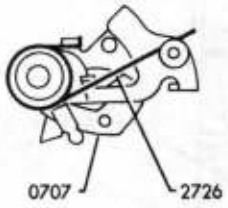
✣ After assembling and making the shutter block operation checking mentioned at left, soldering each terminal.



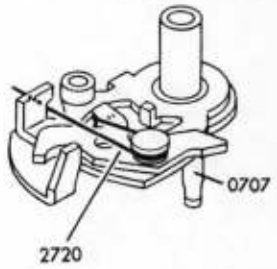
■ Fig. 2 How to engage 2721 SP



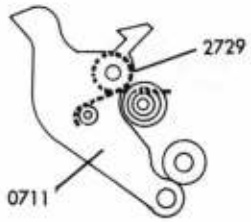
■ Fig. 3 How to engage 2726 SP



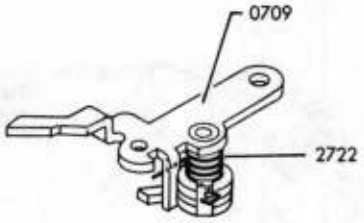
■ Fig. 4 How to engage 2720 SP



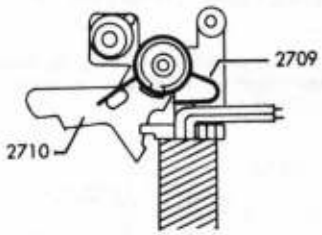
■ Fig. 5 How to engage 2729 SP



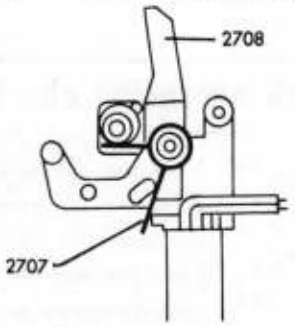
■ Fig. 6 How to engage 2722 SP



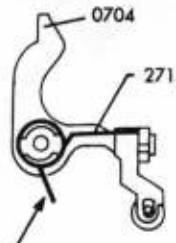
■ Fig. 7 How to engage 2709 SP



■ Fig. 8 How to engage 2707 SP

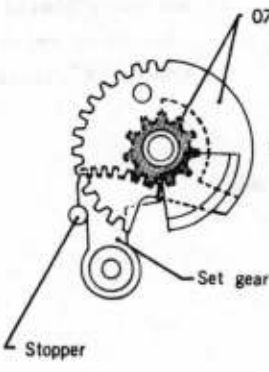


■ Fig. 9 How to engage 2713 SP



Set spring after mounting shutter plate (0702) (Fig. 12 on Page. 3)

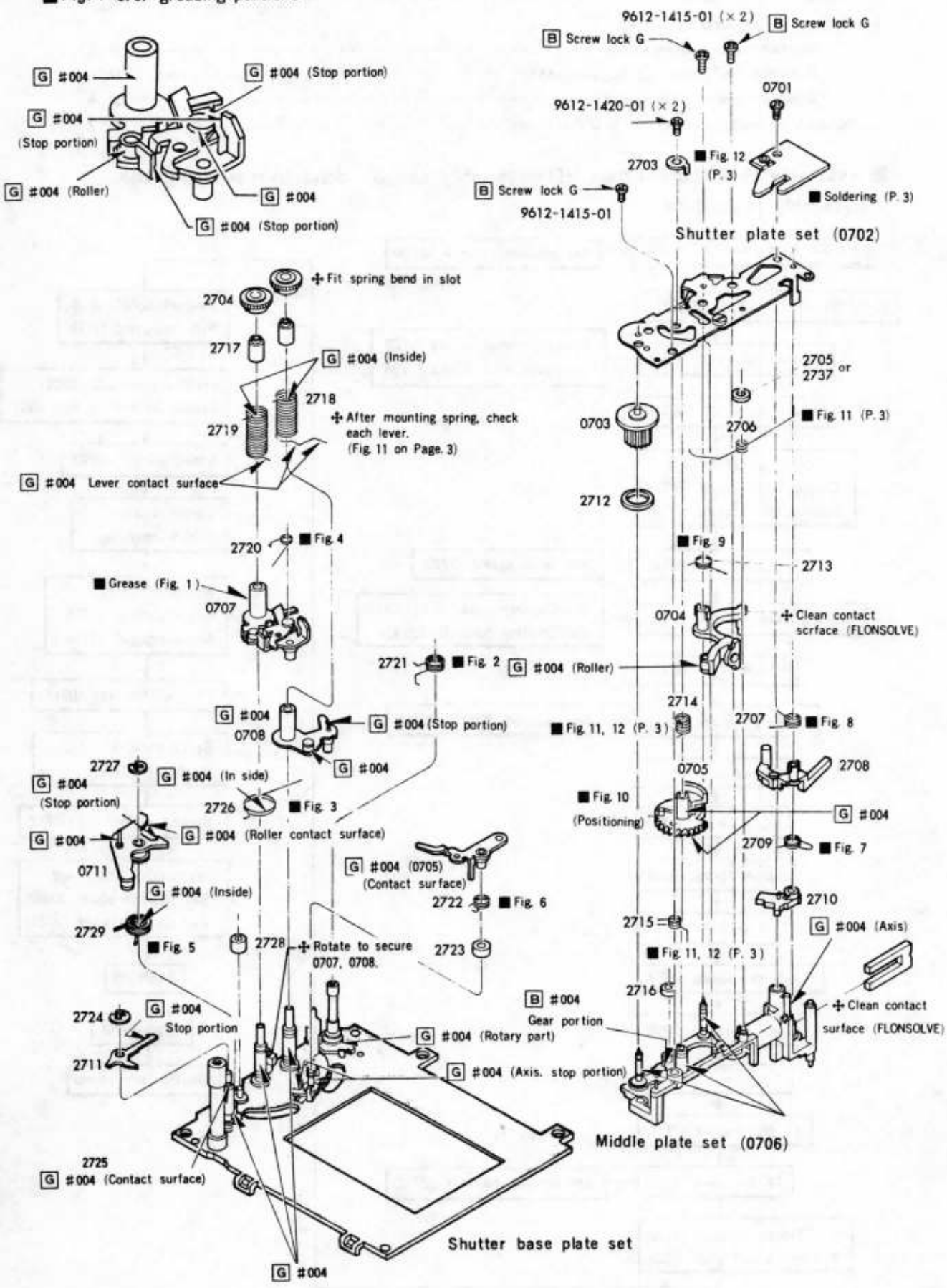
■ Fig. 10 T1 (0705) positioning



✣ With set gear being in contact with stopper, T1 (0705) should be positioned as illustrated.

■ Shutter Assembly I

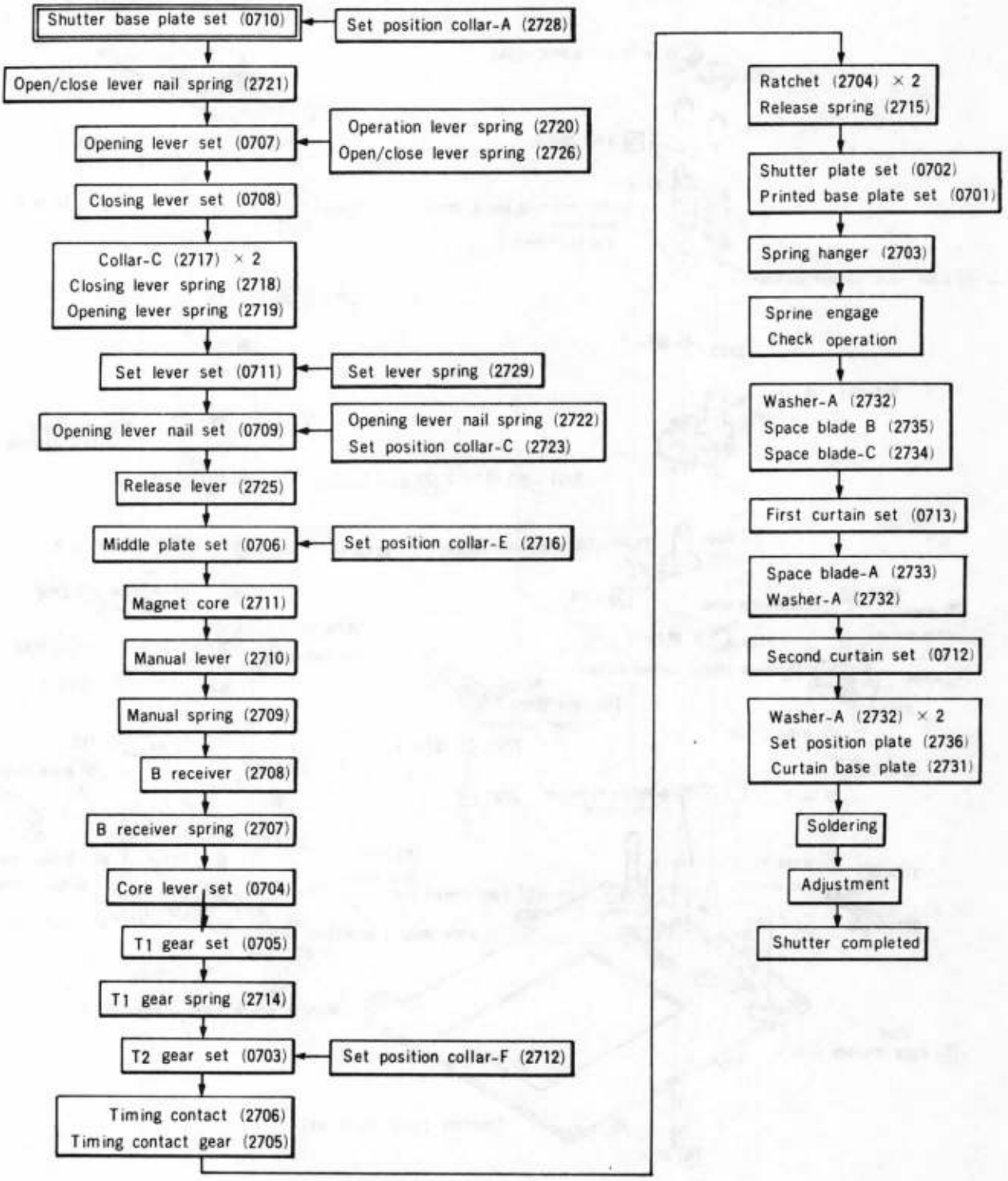
■ Fig. 1 0707 greasing portions



Shutter Assembly & Adjustment

1. Assembly Procedure ..... P. 1 ~ 4
2. Adjust Procedure
   - Curtain speed adjustment ..... P. 5
   - Synchro "X" time lag adjustment ..... P. 6
   - Shutter speed adjustment ..... P. 6
3. Measuring instruments, and sub materials ..... P. 7

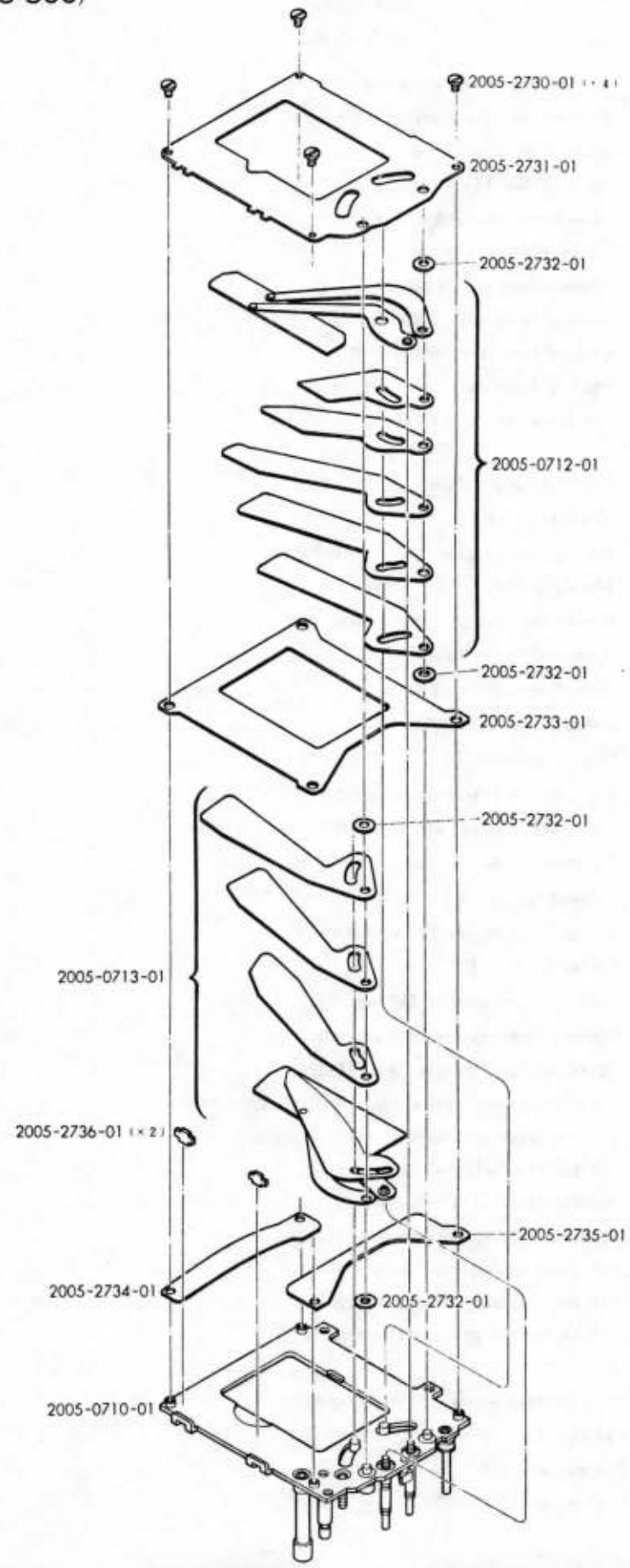
■ Assembly Procedure Chart (Disassembly can be done by reversing the assembly procedure.)



Part No. 部品番号	Part Name 部品名称	Qty 員数
2005-0710-01	Shutter base plate set 台板セット	1
2005-0712-01	Second curtain set 後幕セット	1
2005-0713-01	First curtain set 先幕セット	1
2005-2730-01	Curtain base plate set screw 羽根受け板止めねじ	4
2005-2731-01	Curtain base plate 羽根受け板	1
2005-2732-01	Washer-A 平座 A	4
2005-2733-01	Space blade-A 間隔羽根A	1
2005-2734-01	Space blade-C 間隔羽根C	1
2005-2735-01	Space blade 間隔羽根	1
2005-2736-01	Set position plate 度決め板	2

XD-11 (2005-100)
XD- 7 (2005-300)
XD (2005-500)

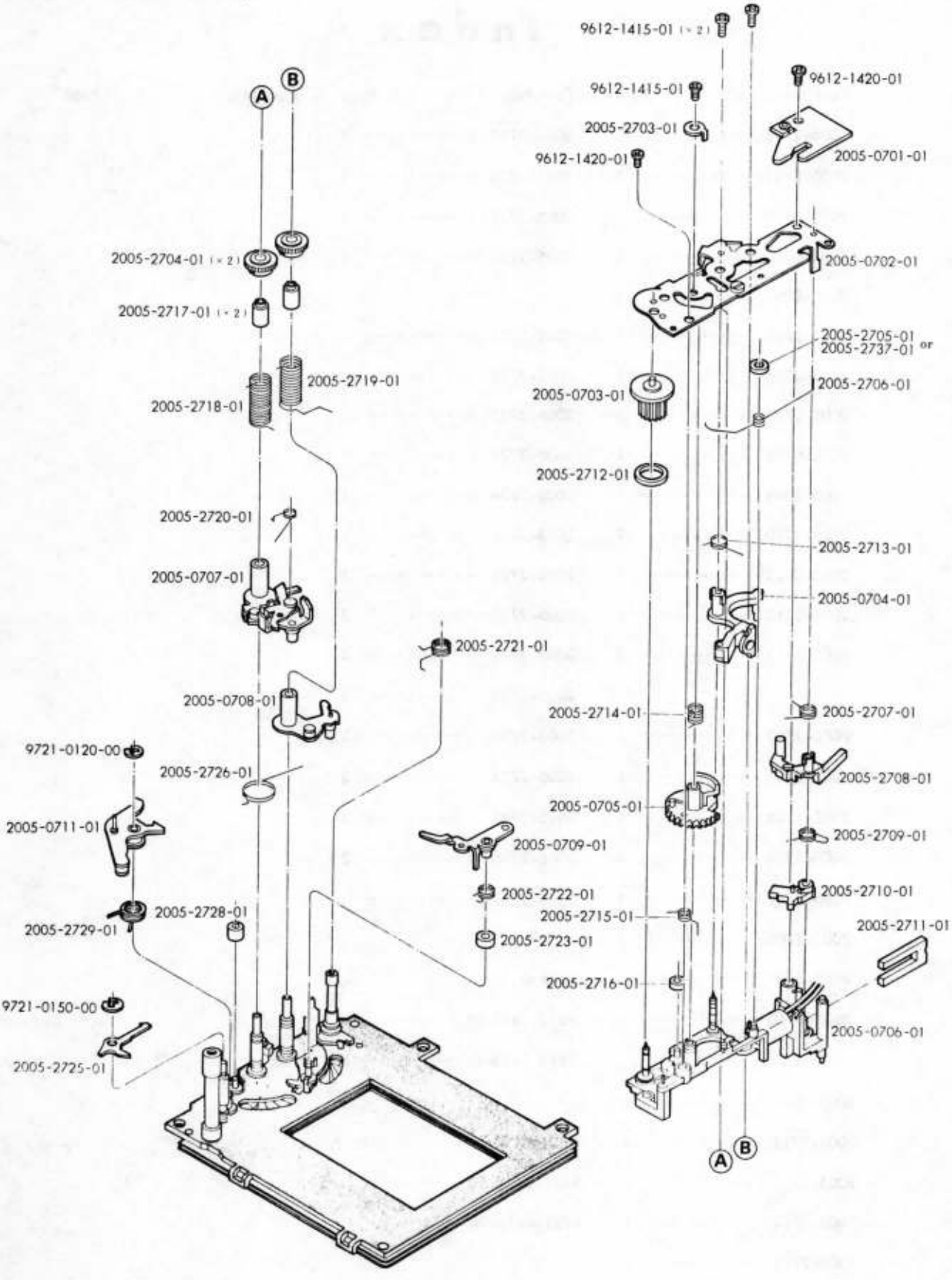
Shutter block Assey. Part No. 2005-2791



Part No. 部品番号	Part Name 部品名称	Qty 員数
2005-2791-01	Shutter block シャッターブロック	1
2005-0701-01	Printed base plate set プリント板セット	1
2005-0702-01	Shutter plate set 上板セット	1
2005-0703-01	T_2 gear set T_2カナセット	1
2005-0704-01	Core lever set 鉄片レバーセット	1
2005-0705-01	T_1 gear set T_1セット	1
2005-0706-01	Middle plate set 中板セット	1
2005-0707-01	Opening lever set 開放レバーセット	1
2005-0708-01	Closing lever set 閉鎖レバーセット	1
2005-0709-01	Opening lever nail set 開放レバー爪セット	1
2005-0711-01	Set lever set セットレバーセット	1
2005-2703-01	Spring hanger ばね掛板	1
2005-2704-01	Ratchet ラチエット	2
2005-2705-01	Timing contact gear タイミング接片座-A	0～1
2005-2706-01	Timing contact タイミング接片	1
2005-2707-01	B receiver spring バルブ受けばね	1
2005-2708-01	B receiver バルブ受け	1
2005-2709-01	Manual spring マニアルばね	1
2005-2710-01	Manual lever マニアルレバー	1
2005-2711-01	Magnet core 鉄 芯	1
2005-2712-01	Set position collar-F 度決めカラーF	1
2005-2713-01	Core lever spring 鉄片レバーばね	1
2005-2714-01	T_1 gear spring T_1ばね	1
2005-2715-01	Release spring レリーズばね	1
2005-2716-01	Set position collar-E 度決めカラー-E	1
2005-2717-01	Collar-C カラーC	2
2005-2718-01	Closing lever spring 閉鎖レバーばね	1
2005-2719-01	Opening lever spring 開放レバーばね	1
2005-2720-01	Operation lever spring 連結レバーばね	1
2005-2721-01	Open/close lever nail spring 閉鎖レバー引用爪ばね	1
2005-2722-01	Opening lever nail spring 開放レバー爪ばね	1
2005-2723-01	Set position collar-C 度決めカラーC	1
2005-2725-01	Release lever レリーズレバー	1
2005-2726-01	Open/close lever spring 開閉レバーばね	1
2005-2728-01	Set position collar-A 度決めカラーA	1
2005-2729-01	Set lever spring セットレバーばね	1
2005-2737-01	Timing contact gear タイミング接片座-B	0～1
9612-1415-01	Phillips type screw 十字穴付なべ頭小ねじ	3
9612-1420-01	Phillips type screw 十字穴付なべ頭小ねじ	2
9721-0120-00	E-ring E-リング	1
9721-0150-00	E-ring E-リング	1

XD-11 (2005-100)
XD- 7 (2005-300)
XD (2005-500)

Shutter block Assey. Part No. 2005-2791



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2005-0702	1
2005-0703	1
2005-0704	1
2005-0705	1
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2005-0707	1
2005-0708	1
2005-0709	1
2005-0710	2
2005-0711	1
2005-0712	2
2005-0713	2
2005-2703	1
2005-2704	1
2005-2705	1
2005-2706	1
2005-2707	1
2005-2708	1
2005-2709	1
2005-2710	1
2005-2711	1
2005-2712	1
2005-2713	1
2005-2714	1
2005-2715	1
2005-2716	1
2005-2717	1
2005-2718	1
2005-2719	1
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2005-2728	1
2005-2729	1
2005-2730	2
2005-2731	2
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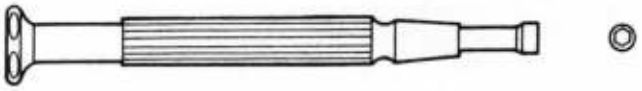
2005-2733	2
2005-2734	2
2005-2735	2
2005-2736	2
2005-2737	1
Screw	
9612-1415-01	1
9612-1420-01	1
E-ring	
9721-0120-00	1
9721-0150-00	1

■Tool No. 2005-5001-75

Mirror base plate holder

■Tool No. 2005-9413-75

Operation ring B nut spanner



■Tools Used in Common

■Tool No. 012-2438-77 or 026-9106-77

Self charge lever setscrew spanner

Used part: 9165 (Self-lever set screw)

■Tool No. 054-9024-77

Panta lock spring hanger-A spanner

Used part: 3076 (Winding operation lever stopper)
: 9019 (Winding operation lever axis)
: 9023 (Operation ring stopper-B axis)

■Universal compass set

■G-ring plier No. AOG

■Tweezer with plastic tip

■Luminescence adjusting driver C

■Sub Materials

■Grease

- Grease #006
- Grease #335
- Grease #704
- Grease F2

■Oil

- Oil #012

■Binding Agent

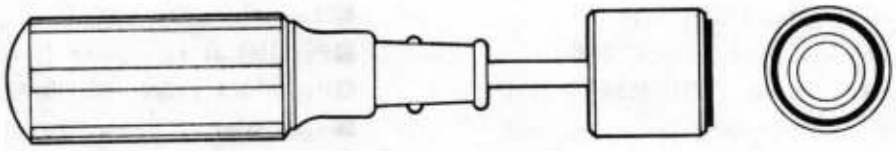
- PLIOBOND
- SONI-BOND SC-108
- SILICON BOND KE-441
- ALTECO CN-2
- LOCKTITE #242
- SCREW LOCK G

■Cleaner

- FLONSOLVE

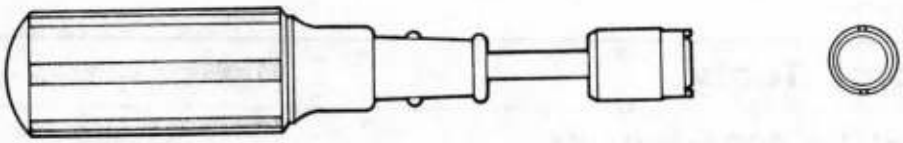
■Tool No. 2005-1343-75

Winding lever cap spanner



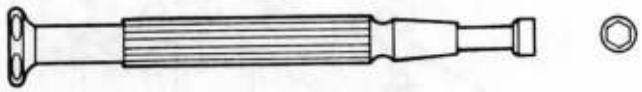
■Tool No. 2005-2004-75

Release button seat spanner



■Tool No. 2005-2006-75

Speed dial shaft nut spanner

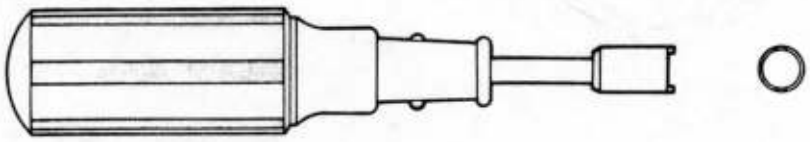


■Tool No. 2005-3310-75

Rewinding shaft temporary nut

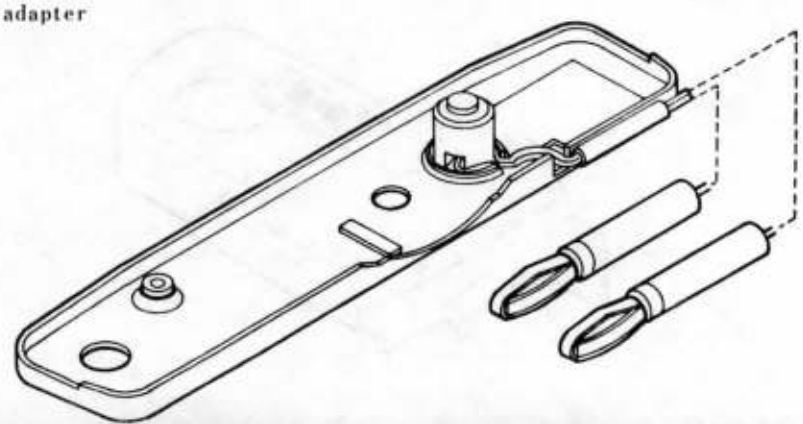
■Tool No. 2005-3311-75

Top cover pressure nut spanner



■Tool No. 2005-4203-75

Battery adapter



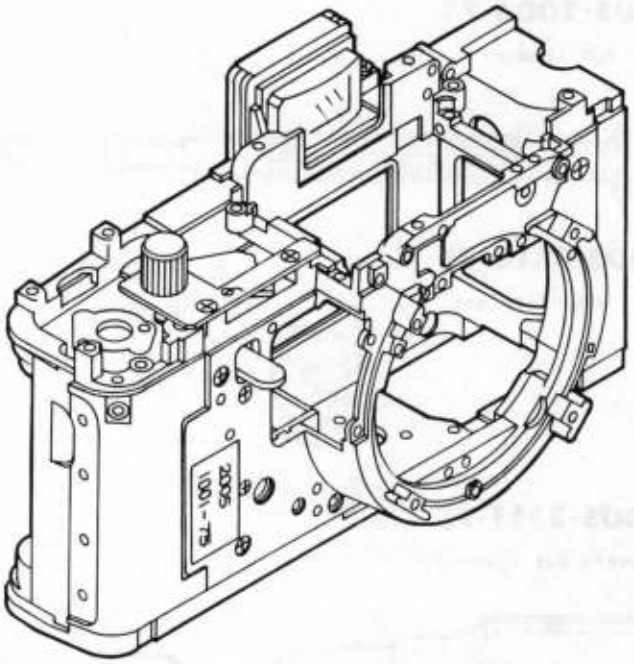
■Measuring Instruments

■Camera standard tester 〈Model ST-5101〉
■EE tester 〈Model EE2101·2111〉
■Shutter tester 〈Model SD-2101〉
■Luminescence box 〈Model L-222·223〉
■Shutter tester 〈Model FS1D-MN4·S-2101〉
■Digital tester 〈Type 2507〉
■High impedance adapter 〈Model HA-1〉
■Constant voltage DC power supply 〈Model E-1·E-2〉
■Mirror angle adjuster 〈Model MA-Ⅱ〉
■Collimator 〈Model RC1000-Ⅰ·Ⅱ·Ⅲ〉
■Master lens for 054 finder-back adjustment 〈054-5202-79〉
■Master lens for S-auto 〈2005-0001-75〉
■Master lens for A-auto 〈2005-0002-75〉
■Magnifier 〈8213-007〉
■Parallel surface plate (for 2005)
■Body-back gauge (43.70mm)
■Dial gauge
■Dial tention gauge (150g)
■Contact efficiency meter
■Isolation resistance meter
■Circuit tester

■Special Tools

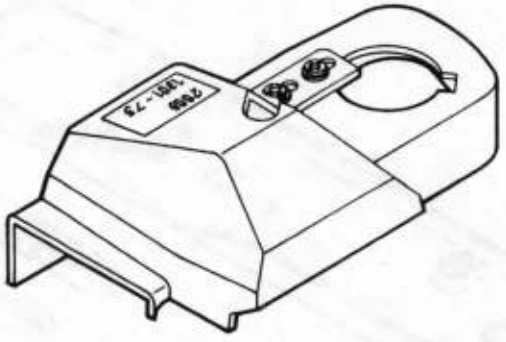
■Tool No. 2005-1001-75

Temporary body



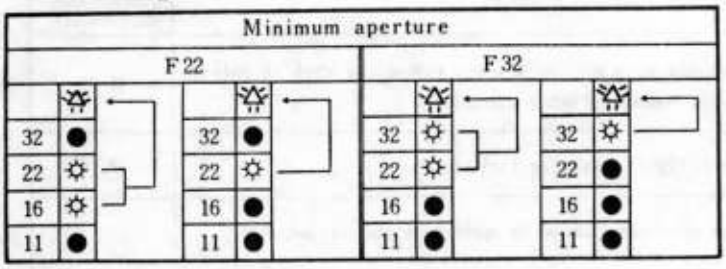
■Tool No. 2005-1301-75

Temporary cover

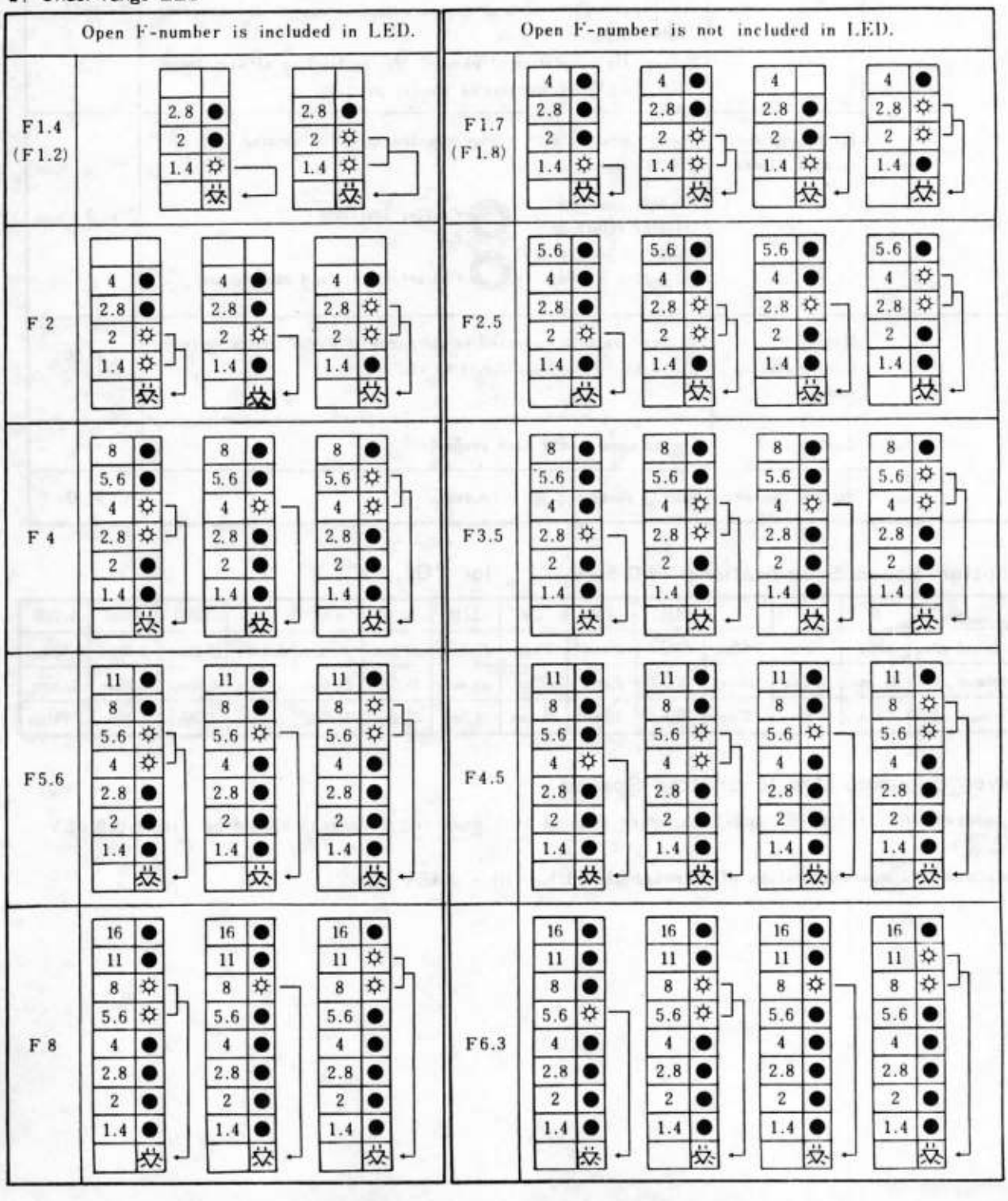


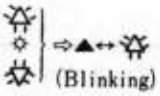
Allowable skip to over-or under-range LED (△, ▽) in lenses other than 2521.

1. Over-range LED



2. Under-range LED



Item	Check point	Contents	Checking·Adjustment (Refer to Disass'y·Ass'y·Adjust manual)
Others	Back cover	Operation···It should open smoothly when rewinding knob is pulled up. No looseness when closed.	P.32
	Lens engaging	Operation···Heavy, light, defectioe lock, loose.	P.18
	Interchangeability with exclusive strobo	Check alteration of indication with strobo on completion of charge.  (Blinking) Over-range LED (△) should blink on completion of charge within or outside the metering range. Tuning···On completion of charge. (during blinking of over-range LED irrespective of shutter position.	P.57
	Interchangeability with winder	Check operation with winder mounted and film inserted. SW. 14 contact position. Winding completed (coupler returned)··· Contact invisible Gap Releasing completed and during winding··· Contact visible and gap appears.	P. 9
	Magnetic release locking voltage	Magnetic release is locked in the range of power source voltage 1.9~2.1V. Then LED should be off.	P.56
	Remote cord	Remote cord should work properly.	——
	Battery chamber	Battery contact, plate corrosion.	P.32

Shutter Speed Specifications ($\pm$0.5EV. $^{+0.5}_{-0.35}$ for "O", "X")

Speed / Specification	O	X	1	1/2	1/4	1/8	1/15	1/30	1/60	1/125	1/250	1/500	1/1000
Standard value	10ms	10ms	1000ms	500ms	250ms	125ms	62.5ms	31.3ms	15.6ms	7.81ms	3.91ms	1.95ms	0.977ms
Maximum limit	14.1ms	14.1ms	1410ms	707ms	354ms	177ms	88.4ms	44.3ms	22.1ms	11.0ms	5.53ms	2.76ms	1.38ms
Minimum limit	7.84ms	7.84ms	707ms	354ms	177ms	88.4ms	44.3ms	22.1ms	11.0ms	5.53ms	2.76ms	1.38ms	0.691ms

Uneven Exposure Due to Shutter Speeds

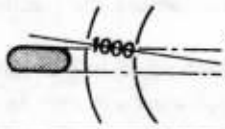
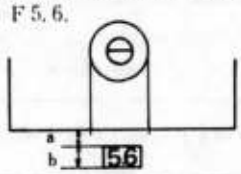
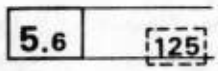
Compared with center (B range), exporure time at both ends (A, C ranges) should be within $\pm$0.3EV ($^{+23\%}_{-19\%}$).

Maximum and minimum values of B range should be within 0.4EV ($^{+32\%}_{-25\%}$).

<table>
<tr><th>Item</th><th>Check point</th><th>Contents</th><th>Checking·Adjustment (Refer to Disass'y·Ass'y·Adjust manual)</th></tr>
<tr><td>Aoto exposure</td><td>LED indication (error)</td><td>S mode···Lens 2521, ASA 100, F 16
<table>
<tr><th rowspan="2">Luminance</th><th rowspan="2">Shutter speed</th><th colspan="6">Allowable indications (± 1 EV)</th></tr>
<tr><th>Indi-cation</th><th>+1EV</th><th>+0.5EV</th><th>0</th><th>−0.5EV</th><th>−1EV</th></tr>
<tr><td rowspan="9">EV 11 (ASA 100)</td><td rowspan="3">1/15</td><td>F 16</td><td>☼</td><td>☼</td><td>●</td><td>●</td><td>●</td></tr>
<tr><td>F 11</td><td>●</td><td>☼</td><td>☼</td><td>☼</td><td>●</td></tr>
<tr><td>F 8</td><td>●</td><td>●</td><td>●</td><td>☼</td><td>☼</td></tr>
<tr><td rowspan="3">1/60</td><td>F 8</td><td>☼</td><td>☼</td><td>●</td><td>●</td><td>●</td></tr>
<tr><td>F 5.6</td><td>●</td><td>☼</td><td>☼</td><td>☼</td><td>●</td></tr>
<tr><td>F 4</td><td>●</td><td>●</td><td>●</td><td>☼</td><td>☼</td></tr>
<tr><td rowspan="3">1/500</td><td>F 2.8</td><td>☼</td><td>☼</td><td>●</td><td>●</td><td>●</td></tr>
<tr><td>F 2</td><td>●</td><td>☼</td><td>☼</td><td>☼</td><td>●</td></tr>
<tr><td>F 1.4</td><td>●</td><td>●</td><td>●</td><td>☼</td><td>☼</td></tr>
</table></td><td>P.52</td></tr>
<tr><td>Auto exposure</td><td>LED Warning (S mode only)</td><td>Skip of indication to over-range LED (△)
Lens 2521 or Lens with F 16 (minimum)
<table>
<tr><th>Minimum F-number</th><th colspan="2">Allowable skip</th><th colspan="2"></th></tr>
<tr><th></th><th>F</th><th>LED</th><th>F</th><th>LED</th></tr>
<tr><td rowspan="6">F 16</td><td></td><td>☼</td><td></td><td>☼</td></tr>
<tr><td>32</td><td>●</td><td>32</td><td>●</td></tr>
<tr><td>22</td><td>●</td><td>22</td><td>●</td></tr>
<tr><td>16</td><td>☼</td><td>16</td><td>☼</td></tr>
<tr><td>11</td><td>☼</td><td>11</td><td>●</td></tr>
<tr><td>8</td><td>●</td><td>8</td><td>●</td></tr>
</table>
For other lenses, refer to P.6.</td><td>P.39</td></tr>
<tr><td></td><td>Skip of indication to under-range LED (▽)
Lens 2521
<table>
<tr><th>Open F-number</th><th colspan="2">Allowable skip</th><th colspan="2"></th></tr>
<tr><th></th><th>F</th><th>LED</th><th>F</th><th>LED</th></tr>
<tr><td rowspan="4">F 1.4</td><td>2.8</td><td>●</td><td>2.8</td><td>●</td></tr>
<tr><td>2</td><td>☼</td><td>2</td><td>●</td></tr>
<tr><td>1.4</td><td>☼</td><td>1.4</td><td>☼</td></tr>
<tr><td></td><td>☼</td><td></td><td>☼</td></tr>
</table>
For other lenses, refer to P.6.</td><td>P.55</td></tr>
<tr><td>Focus</td><td>Mirror</td><td>Angle···45° ±30′
Operation···Loose, two-step, timing, bounce.</td><td>P.21</td></tr>
<tr><td></td><td>Body back</td><td>$43.70^{+0.02}_{0}$ Parallelism: within 0.02</td><td>P.35</td></tr>
<tr><td></td><td>Finder back</td><td>43.575 ± 0.025</td><td>P.36</td></tr>
<tr><td>Others</td><td>Eye-piece shutter</td><td>Operation···Loose, clearance, clicking.</td><td>P.27</td></tr>
<tr><td></td><td>MD, MC lever</td><td>Operation···Noise, catching, returning.</td><td>P.17 ~ 18</td></tr>
<tr><td></td><td>Pre-view button</td><td>Operation···Squeaking, gritty, returning.</td><td>P.13</td></tr>
</table>

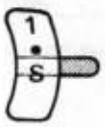
<table>
<tr><th>Item</th><th>Check point</th><th>Contents</th><th>Checking· Adjustment (Refer to Disass'y·Ass'y· Adjust manual)</th></tr>
<tr><td>Auto exposure</td><td>Mode change lever</td><td>Operation···Not smooth, clicking, locking.
Scale deflection

Index should be within letter width.</td><td>P.58</td></tr>
<tr><td>Aoto exposure</td><td>Exposure error</td><td>A mode···Lens 2521, ASA 100
<table>
<tr><th>Luminance (ASA 100)</th><th>F-number</th><th>EE level tolerance</th><th>Variation</th></tr>
<tr><td rowspan="2">EV 15</td><td>F 16</td><td rowspan="3">±0.8EV</td><td rowspan="3">0.6EV or less</td></tr>
<tr><td>F 5.6</td></tr>
<tr><td>EV 11</td><td>F 8</td></tr>
<tr><td>EV 9</td><td>F 2.8</td><td></td><td></td></tr>
</table></td><td>P.49</td></tr>
<tr><td></td><td></td><td>S mode···Master lens for S-auto, ASA 100, F 16
<table>
<tr><th>Luminance (ASA 100)</th><th>Shutter speed</th><th>EE level tolerance</th><th>Variation</th></tr>
<tr><td rowspan="4">EV 11</td><td>1/500</td><td rowspan="4">±0.8EV</td><td rowspan="4">0.6EV or less</td></tr>
<tr><td>1/60</td></tr>
<tr><td>1/15</td></tr>
<tr><td>1/8</td></tr>
</table></td><td>P.50</td></tr>
<tr><td></td><td>Speed diflection in S mode</td><td>Master lens for S-auto, ASA 100, F 16
<table>
<tr><th>Luminance</th><th>Shutter speed</th><th>Tolerance</th><th>Allowable range (ms)</th><th>Variation</th></tr>
<tr><td rowspan="4">EV 11 (ASA 100)</td><td>1/125</td><td rowspan="4">±1EV</td><td>3.91~15.6</td><td rowspan="4">0.5EV</td></tr>
<tr><td>1/60</td><td>7.81~31.3</td></tr>
<tr><td>1/30</td><td>15.6~62.5</td></tr>
<tr><td>1/15</td><td>31.3~125</td></tr>
</table></td><td>P.50</td></tr>
<tr><td></td><td>LED indication (error)</td><td>A mode···Lens 2521, ASA 100
<table>
<tr><th rowspan="2">Luminance</th><th rowspan="2">F-number</th><th colspan="6">Allowable indications (±1EV)</th></tr>
<tr><th>Indi-cation</th><th>+1EV</th><th>+0.5EV</th><th>0</th><th>−0.5EV</th><th>−1EV</th></tr>
<tr><td rowspan="9">EV 11 (ASA 100)</td><td rowspan="3">F 2.8</td><td>500</td><td>☼</td><td>☼</td><td>●</td><td>●</td><td>●</td></tr>
<tr><td>250</td><td>●</td><td>☼</td><td>☼</td><td>☼</td><td>●</td></tr>
<tr><td>125</td><td>●</td><td>●</td><td>●</td><td>☼</td><td>☼</td></tr>
<tr><td rowspan="3">F 8</td><td>60</td><td>☼</td><td>☼</td><td>●</td><td>●</td><td>●</td></tr>
<tr><td>30</td><td>●</td><td>☼</td><td>☼</td><td>☼</td><td>●</td></tr>
<tr><td>15</td><td>●</td><td>●</td><td>●</td><td>☼</td><td>☼</td></tr>
<tr><td rowspan="3">F 16</td><td>15</td><td>☼</td><td>☼</td><td>●</td><td>●</td><td>●</td></tr>
<tr><td>8</td><td>●</td><td>☼</td><td>☼</td><td>☼</td><td>●</td></tr>
<tr><td>4</td><td>●</td><td>●</td><td>●</td><td>☼</td><td>☼</td></tr>
</table></td><td>P.52</td></tr>
</table>

Item	Check point	Contents	Checking·Adjustment (Refer to Disass'y·Ass'y·Adjust manual)
Shutter	Speed dial	Operation···Not smooth, squeaking, clicking. Scale deflection  Center line of scale should be within the index.	P.29, 58
	Self-timer	Operation···Not smooth, wrong setting, shutter release, noise. Operation time···10±3 sec.	P.16
	Synchro (X contact)	Conduction···It should operate without fail.	
		Delay time··· Over 0.3 ms in range A / Over 2.5 ms in range B } Shutter speed "X"	P.46
		Insulation resistance···10 MΩ or over (Use DC 250V insulation resistance meter.)	
		Contacting efficiency···50% (measuring time: 1 ms) at shutter speed "X". Over 60% (measuring time: 2.5 ms) at speeds lower than 1/30 sec.	
Finder	View	Image falling, ∞ base plate, one-side vignette, cloud.	P.36
	Aperture indication	F-number should be indicated within the frame. Adjacent number should be invisible at F 5.6. Frame position:  Height···0< a≤b Right/left··· Within micro-prism width	P.33
	Speed indication	Indication···Speed indication should appear in M and S mode, but not in A mode. Position  Speed number should be within the F-number indication frame.	P.34
	Speed (aperture) figure plate	Operation···Speed number band should appear in M and A mode, but F-number band in S mode. Number band and LED should be within the range as follows.	P.33
Auto exposure	ASA dial	Operation···Not smooth, squeaking gritty, loose. Scale deflection Index should not be aligned to adjacent ASA scale.	P.58
	Exposure correction lever	Operation···Not smooth, gritty, clicking. Scale deflection Center of letter should be aligned to index.	

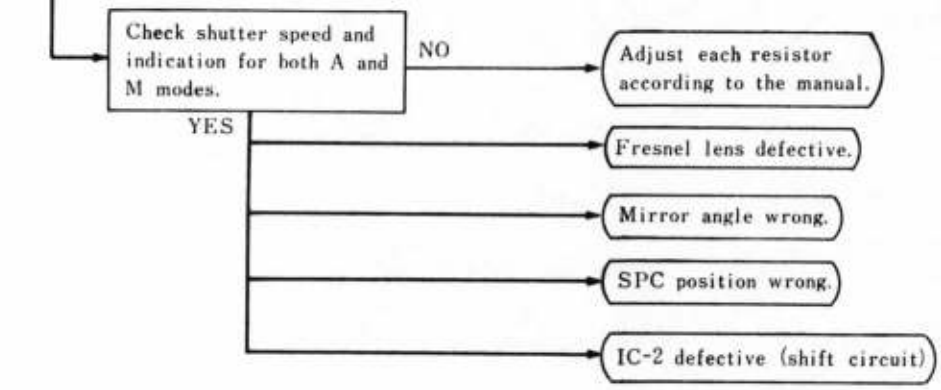
Inspection Specification

1. This specification includes the allowable quality levels in the production line so that we can guarantee the quality of products to the general users. The specifications are given in detail item by item so that you can refer to them when handling the requirements of users. Also, you can use the specifications for rechecking the products after completion of repair.
2. When carrying out outgoing or incoming inspections, do not directly apply the specifications to the measured values but correctly understand the purposes of the inspections and then do the checkings, for instance, in accordance with the incoming inspection specification manual.
3. Some users with special purposes may sometimes require different specifications because they are not satisfied with this specification. In that case, give priority to the users' requests and then make the necessary adjustments after checking to see if they are possible or not.

Item	Check point	Contents	Checking·Adjustment (Refer to Disass'y·Ass'y·Adjust manual)
Winding	Winding lever	Operation···Not smooth, shifted back, noise, looseness.	P. 7, 58
	Spool	Operation···Not smooth, slipping, defective winding.	P. 1 ~ 2
	Sprocket	Operation···Slipping with rewind button pushed.	P. 1 ~ 3
Rewinding	Rewind button	Operation···Jammed in, released, catching.	P. 1 ~ 3
	Rewind crank	Operation···Not smooth, catching, defective spring, squeaking.	P.58
Film counter	Feed	Operation···Set to "1" at 2nd wind, or no feed, standstill, catching, skip.	P. 8
	Retern	Operation···Set to "S" with back cover open, or no return, catching.	
	Index position	When indicated by numbers:  Mark (●) for next number should not touch index. When indicated by ●: Mark (●) for film number should be within index.	
Film signal	Feed	Operation···Within 1/3, exceeding R range when counter is at 1. Over 3/3, not entering R range when counter is at 36+1.	P. 7
	Retern	Operation···No signal should be seen when counter is at "S".	
Maltiple exposure		Operation···Slipping of spool, sprocket. Picture deflection···Less than 0.3mm.	P. 1 ~ 3 P. 7
Shutter	Operation	Abnormal noise, bump, curtain overlap.	P. 44 ~ 46
	Shutter speed	For allowable error, refer to P5.	

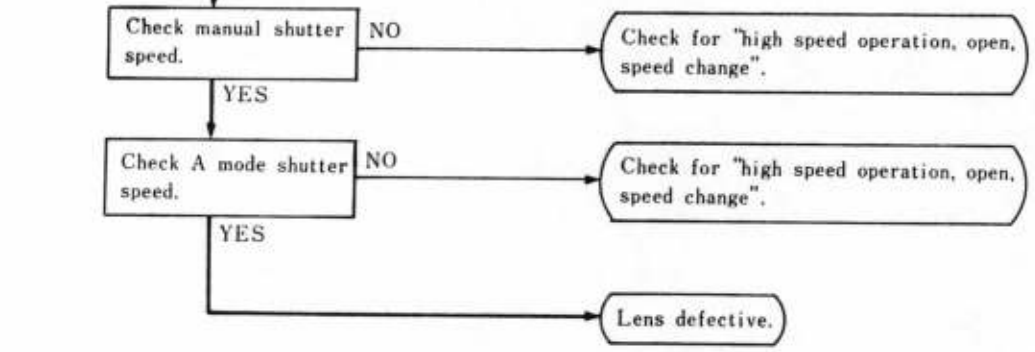
Deflected indication

(Exposure volume and other functions are in normal conditions)


Check shutter speed and indication for both A and M modes.
NO
Adjust each resistor according to the manual.
YES
Fresnel lens defective.
Mirror angle wrong.
SPC position wrong.
IC-2 defective (shift circuit)

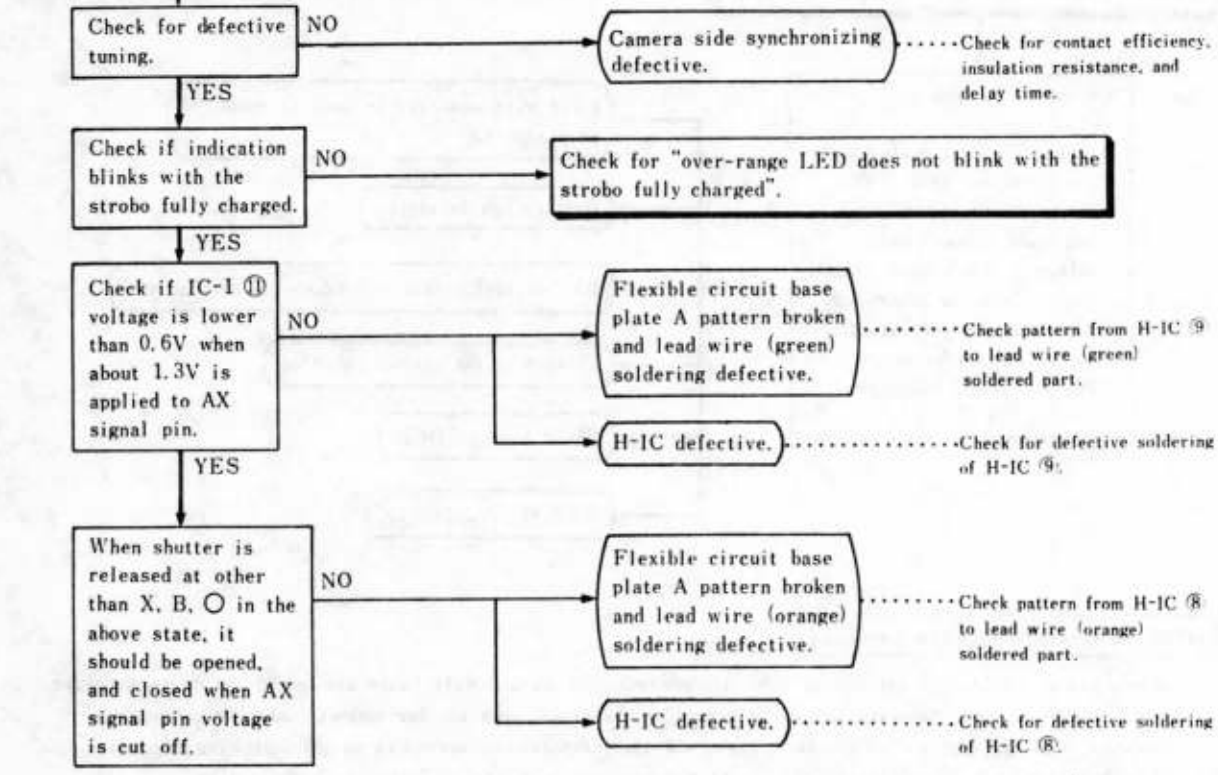
Defective exposure

(The outcome is over or under.)



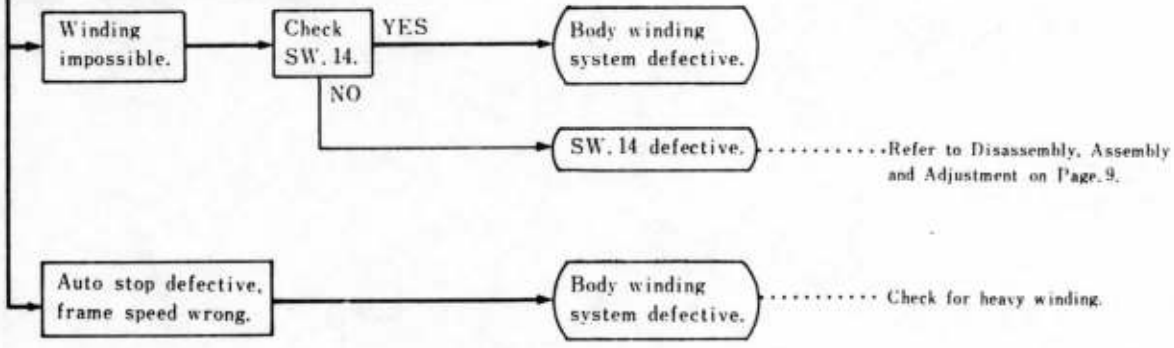
Defective tuning with exclusive strobo

(Repair shutter indication trouble beforehand if any.)


Check for defective tuning.
NO
Camera side synchronizing defective.
Check for contact efficiency, insulation resistance, and delay time.
YES
Check if indication blinks with the strobo fully charged.
NO
Check for "over-range LED does not blink with the strobo fully charged".
YES
Check if IC-1 ⑪ voltage is lower than 0.6V when about 1.3V is applied to AX signal pin.
NO
Flexible circuit base plate A pattern broken and lead wire (green) soldering defective.
Check pattern from H-IC ⑨ to lead wire (green) soldered part.
H-IC defective.
Check for defective soldering of H-IC ⑨.
YES
When shutter is released at other than X, B, ○ in the above state, it should be opened, and closed when AX signal pin voltage is cut off.
NO
Flexible circuit base plate A pattern broken and lead wire (orange) soldering defective.
Check pattern from H-IC ⑧ to lead wire (orange) soldered part.
H-IC defective.
Check for defective soldering of H-IC ⑧.

Defective winder coupling

(Body defective when checked with the product's winder)



Too early exhaustion of battery.

Check for current consumption and leakage:
- About 7~9 mA during light measurement (SW.5 ON)
- About 17~20 mA during exposure (over 1 sec.)
- About 7~9 mA when shutter button is being depressed after shutter turning off.
- Less than 1 mA current leakage (light measuring circuit OFF).

→ Lead wire squeezed by body or soldered part shorted.
→ Battery box defective.
→ SW. contact resistance excessive or shorted.
→ Pattern in the circuit, shorted.
→ SW.7 kept at OFF.
→ IC-2, H-IC defective.

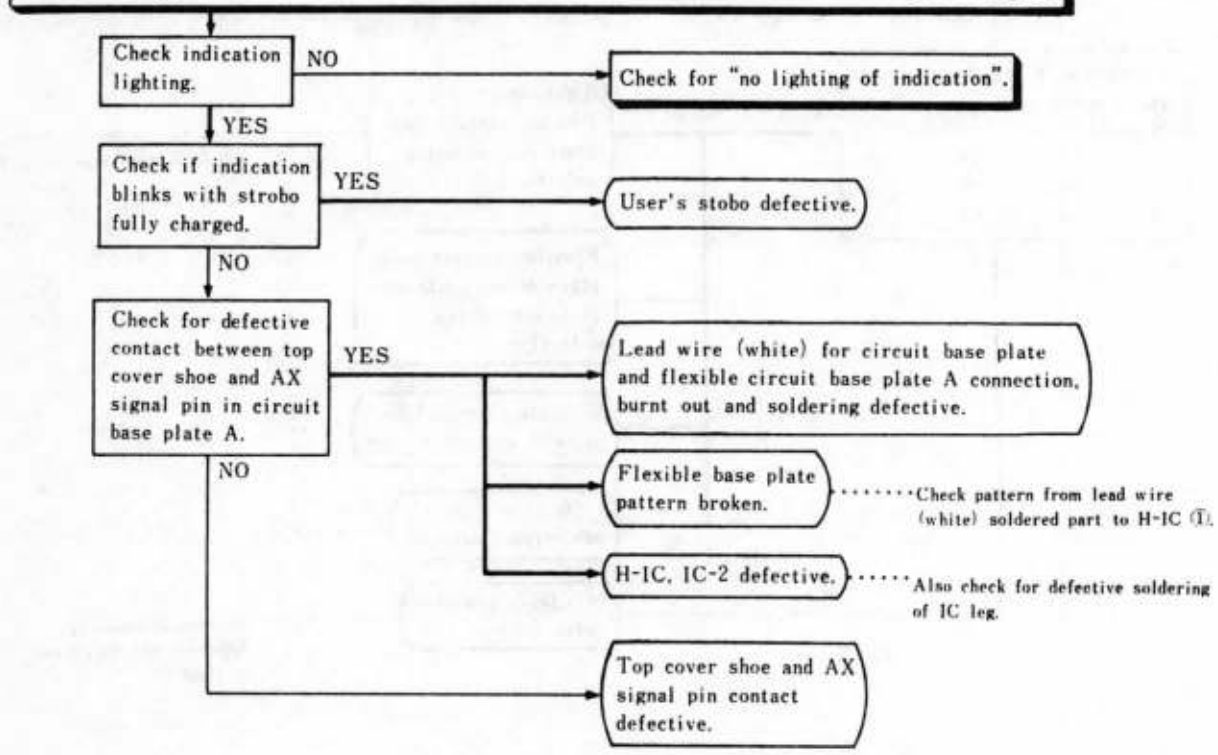
How to measure leakage current

When measuring leakage current of 2005, the conventional method will cause damage to the micro ammeter because 2005 is provided with two capacitors (for diaphragm stop and for magnetic shutter release) in parallel with the battery. Therefore, carry out the measurement according to the following procedure.

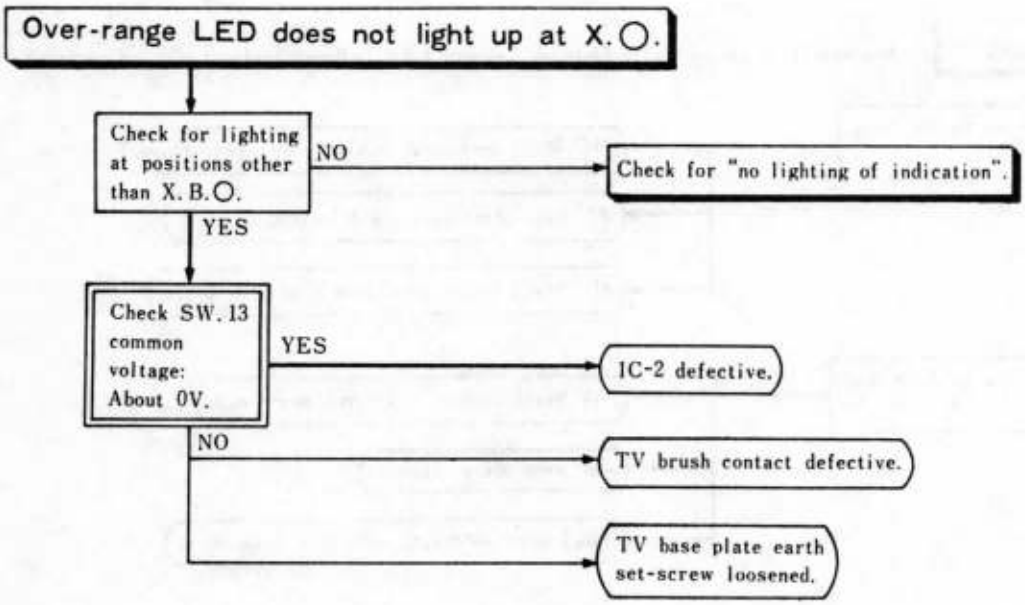
1. Shortcircuit both terminals (⊕, ⊖) of the ammeter with use of "alligator" or the like.
2. Wind the body and operate the shutter.
3. Connect the ammeter to the camera with both terminals of ammeter shorted.
4. Disconnect the shorted terminals, then read the values indicated on completion of release, during winding, completion of winding, respectively.

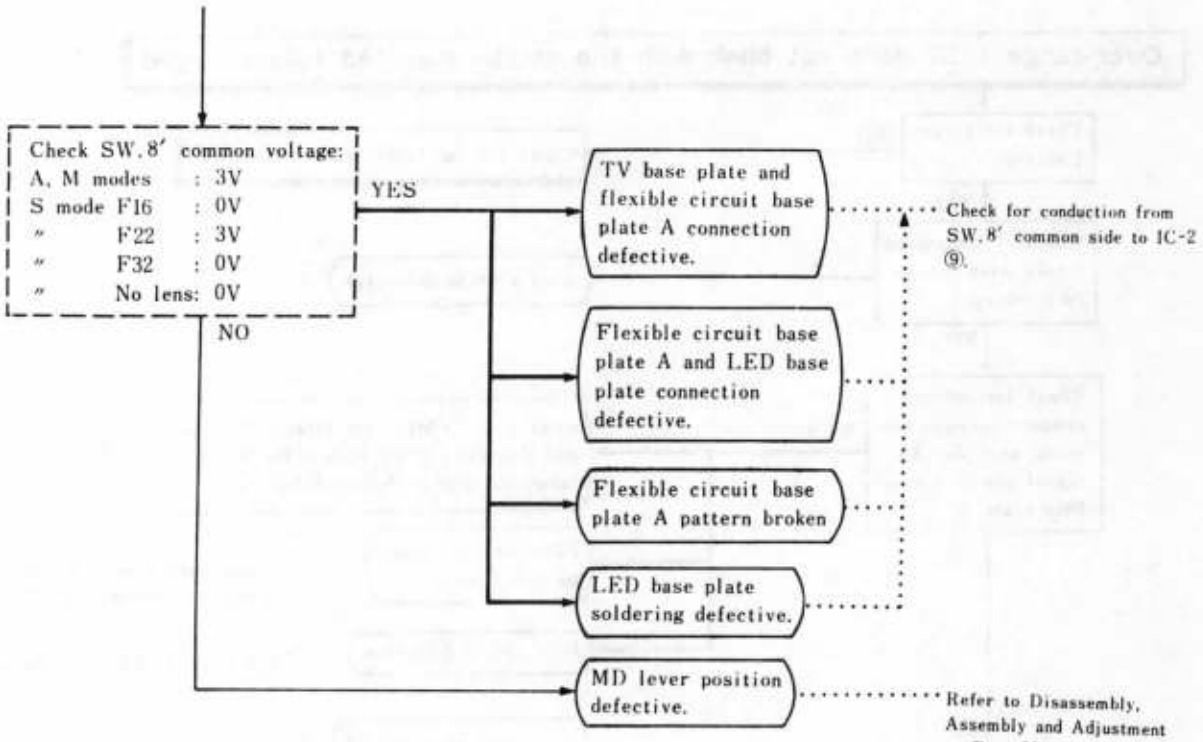
Never push the shutter button when both terminals of ammeter are not shortcircuited.

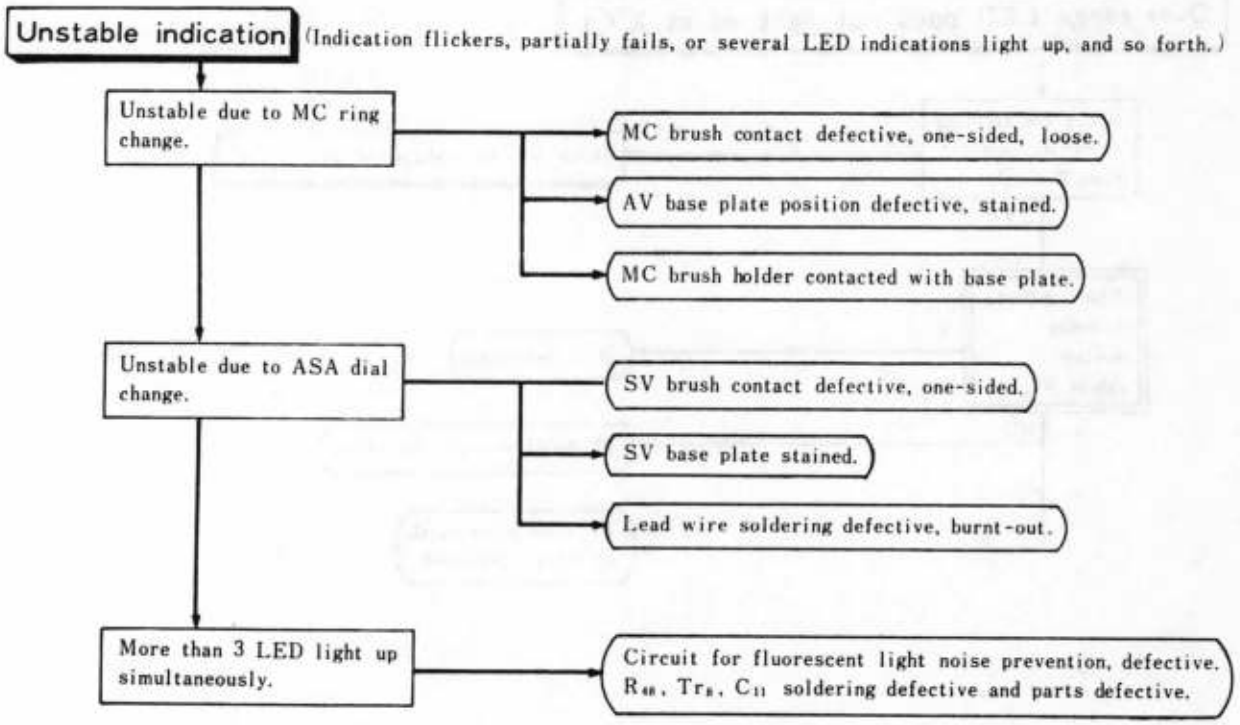
Over-range LED does not blink with the strobo mounted fully charged.

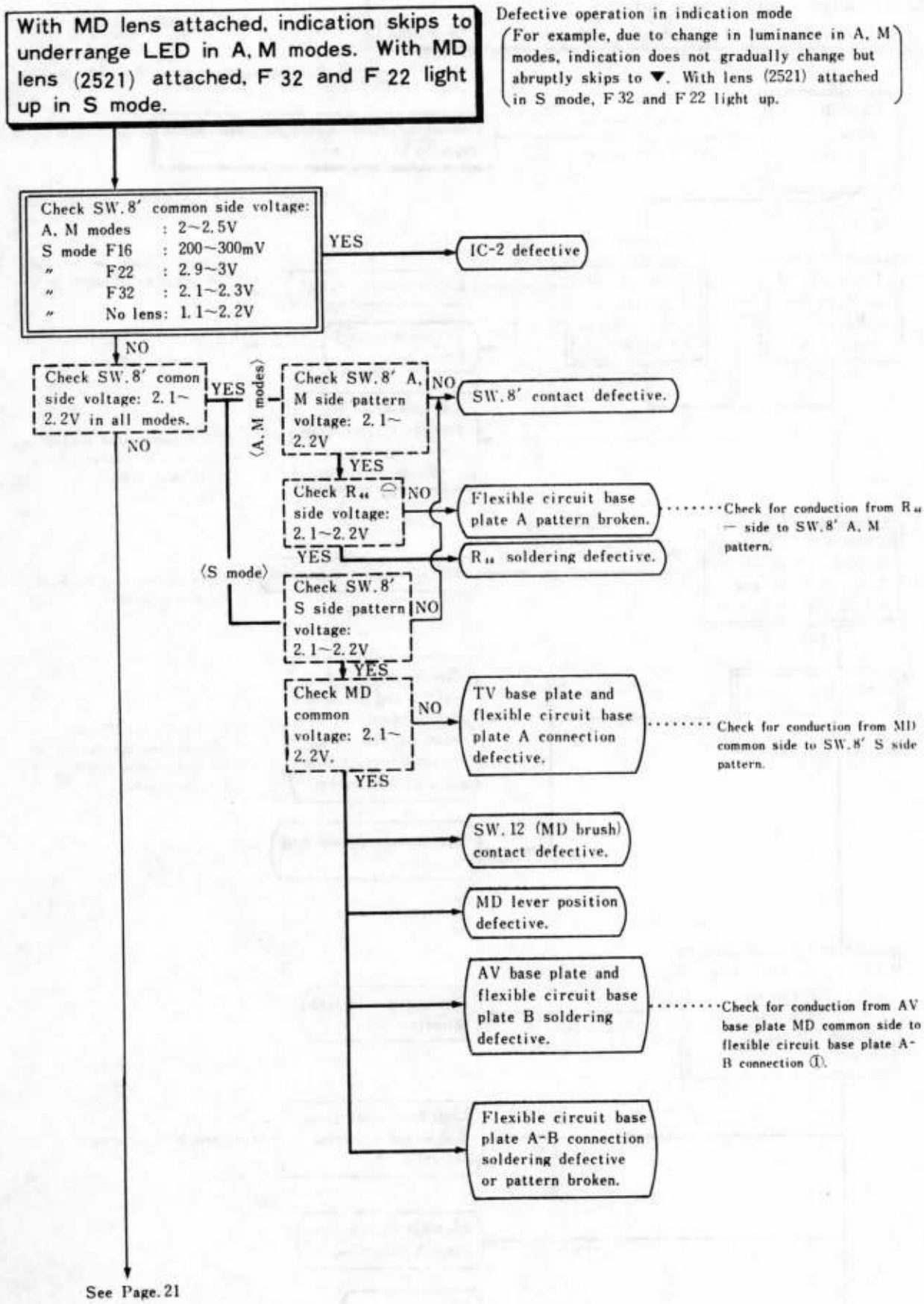

Check indication lighting.
NO
Check for "no lighting of indication".
YES
Check if indication blinks with strobo fully charged.
YES
User's stobo defective.
NO
Check for defective contact between top cover shoe and AX signal pin in circuit base plate A.
YES
Lead wire (white) for circuit base plate and flexible circuit base plate A connection, burnt out and soldering defective.
Flexible base plate pattern broken.
Check pattern from lead wire (white) soldered part to H-IC (1).
H-IC, IC-2 defective.
Also check for defective soldering of IC leg.
NO
Top cover shoe and AX signal pin contact defective.

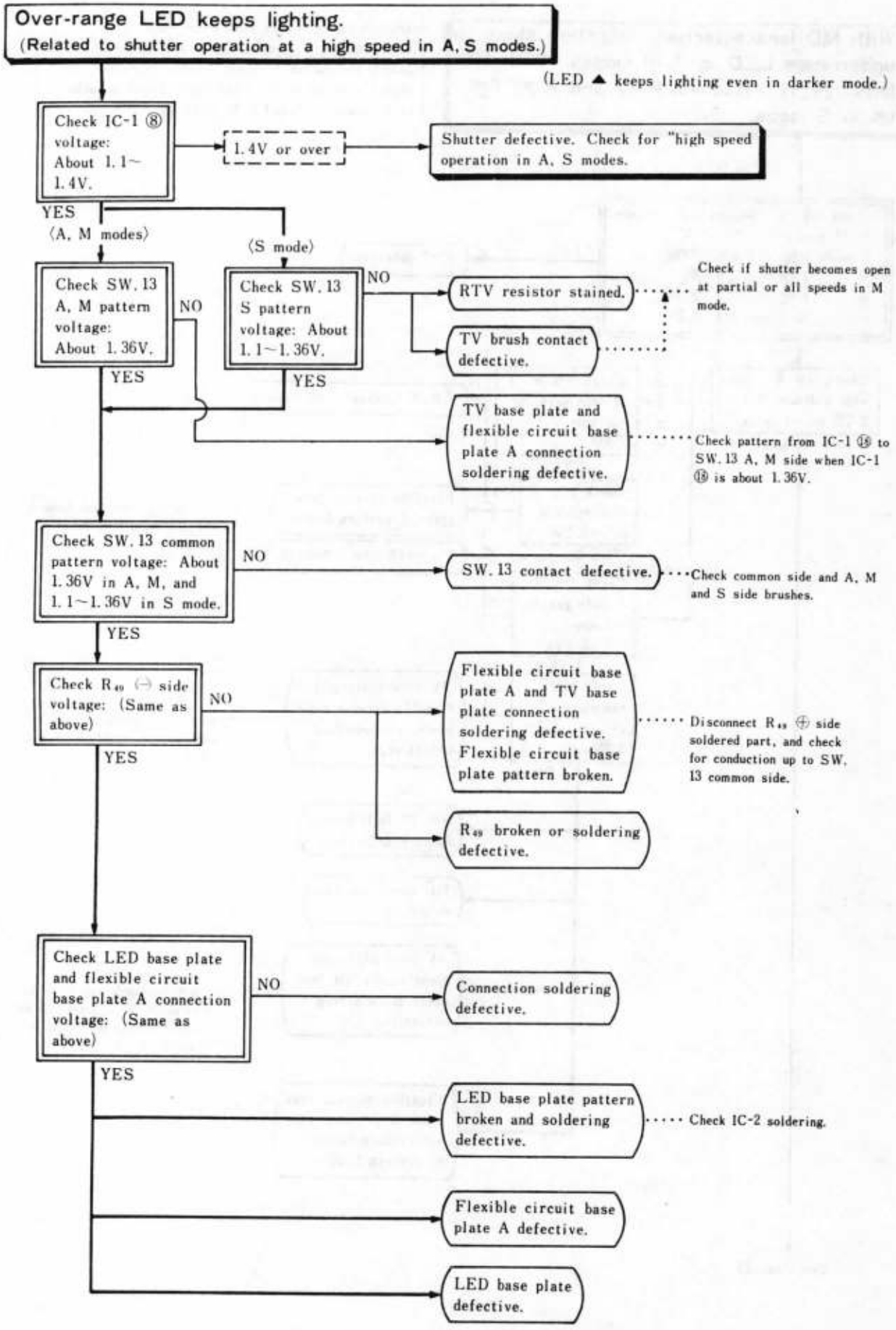
Over-range LED does not light up at X.○.



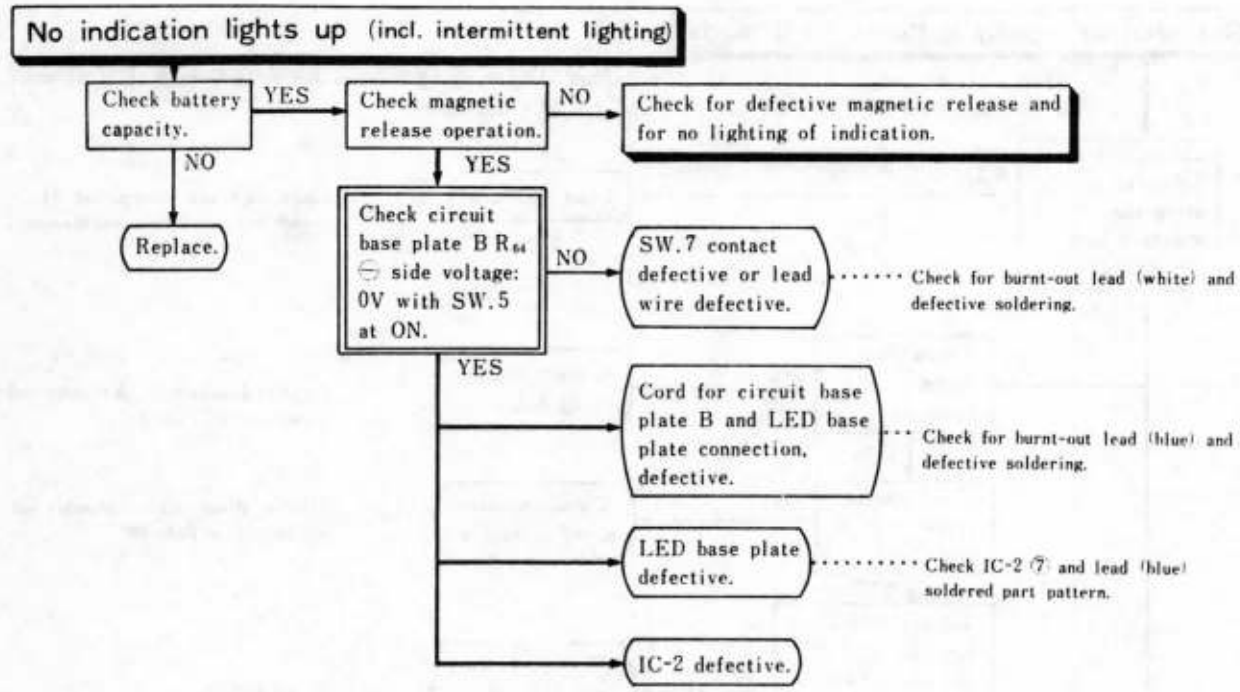

Check SW. 8′ common voltage:
A, M modes : 3V
S mode F16 : 0V
〃 F22 : 3V
〃 F32 : 0V
〃 No lens: 0V
YES
NO
TV base plate and flexible circuit base plate A connection defective.
Flexible circuit base plate A and LED base plate connection defective.
Flexible circuit base plate A pattern broken
LED base plate soldering defective.
MD lever position defective.
Check for conduction from SW. 8′ common side to IC-2 ⑨.
Refer to Disassembly, Assembly and Adjustment on Page. 39.


Unstable indication
(Indication flickers, partially fails, or several LED indications light up, and so forth.)
Unstable due to MC ring change.
MC brush contact defective, one-sided, loose.
AV base plate position defective, stained.
MC brush holder contacted with base plate.
Unstable due to ASA dial change.
SV brush contact defective, one-sided.
SV base plate stained.
Lead wire soldering defective, burnt-out.
More than 3 LED light up simultaneously.
Circuit for fluorescent light noise prevention, defective.
R_{48}, Tr_8, C_{11} soldering defective and parts defective.


With MD lens attached, indication skips to underrange LED in A, M modes. With MD lens (2521) attached, F 32 and F 22 light up in S mode.
Defective operation in indication mode
(For example, due to change in luminance in A, M modes, indication does not gradually change but abruptly skips to ▼. With lens (2521) attached in S mode, F 32 and F 22 light up.)
Check SW.8′ common side voltage:
A, M modes : 2~2.5V
S mode F16 : 200~300mV
〃 F22 : 2.9~3V
〃 F32 : 2.1~2.3V
〃 No lens: 1.1~2.2V
YES
IC-2 defective
NO
Check SW.8′ comon side voltage: 2.1~2.2V in all modes.
YES
NO
〈A, M modes〉
Check SW.8′ A, M side pattern voltage: 2.1~2.2V
NO
SW.8′ contact defective.
YES
Check R44 ⊖ side voltage: 2.1~2.2V
NO
Flexible circuit base plate A pattern broken.
Check for conduction from R44 — side to SW.8′ A, M pattern.
YES
R44 soldering defective.
〈S mode〉
Check SW.8′ S side pattern voltage: 2.1~2.2V
NO
YES
Check MD common voltage: 2.1~2.2V.
NO
TV base plate and flexible circuit base plate A connection defective.
Check for conduction from MD common side to SW.8′ S side pattern.
YES
SW.12 (MD brush) contact defective.
MD lever position defective.
AV base plate and flexible circuit base plate B soldering defective.
Check for conduction from AV base plate MD common side to flexible circuit base plate A-B connection ①.
Flexible circuit base plate A-B connection soldering defective or pattern broken.
See Page.21

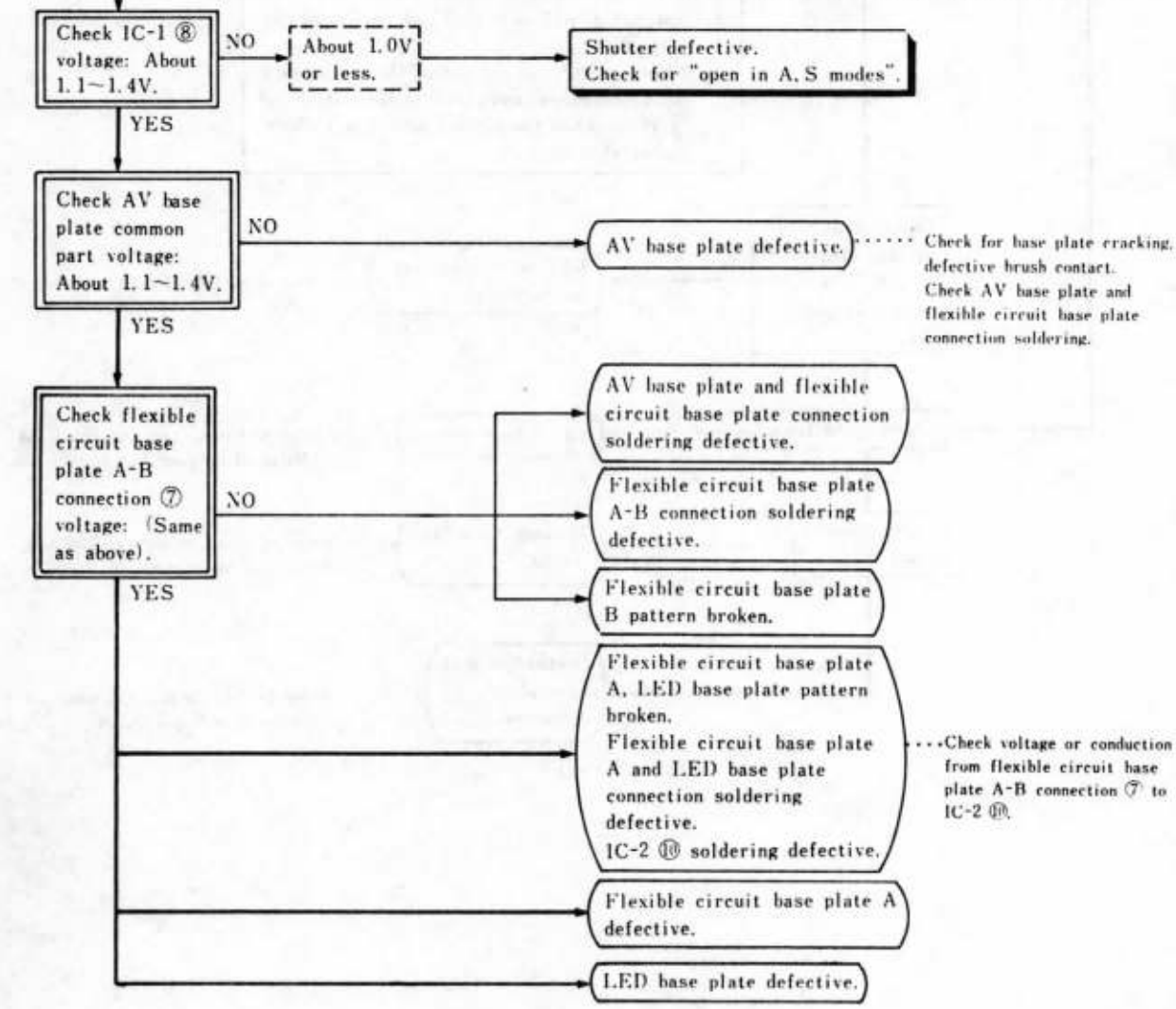

Over-range LED keeps lighting.
(Related to shutter operation at a high speed in A, S modes.)
(LED ▲ keeps lighting even in darker mode.)
Check IC-1 ⑧ voltage: About 1.1~1.4V.
1.4V or over
Shutter defective. Check for "high speed operation in A, S modes.
YES
〈A, M modes〉
〈S mode〉
Check SW. 13 A, M pattern voltage: About 1.36V.
NO
Check SW. 13 S pattern voltage: About 1.1~1.36V.
NO
RTV resistor stained.
TV brush contact defective.
Check if shutter becomes open at partial or all speeds in M mode.
YES
YES
TV base plate and flexible circuit base plate A connection soldering defective.
Check pattern from IC-1 ⑬ to SW. 13 A, M side when IC-1 ⑬ is about 1.36V.
Check SW. 13 common pattern voltage: About 1.36V in A, M, and 1.1~1.36V in S mode.
NO
SW. 13 contact defective.
Check common side and A, M and S side brushes.
YES
Check R_{49} ⊖ side voltage: (Same as above)
NO
Flexible circuit base plate A and TV base plate connection soldering defective. Flexible circuit base plate pattern broken.
Disconnect R_{49} ⊕ side soldered part, and check for conduction up to SW. 13 common side.
R_{49} broken or soldering defective.
YES
Check LED base plate and flexible circuit base plate A connection voltage: (Same as above)
NO
Connection soldering defective.
YES
LED base plate pattern broken and soldering defective.
Check IC-2 soldering.
Flexible circuit base plate A defective.
LED base plate defective.

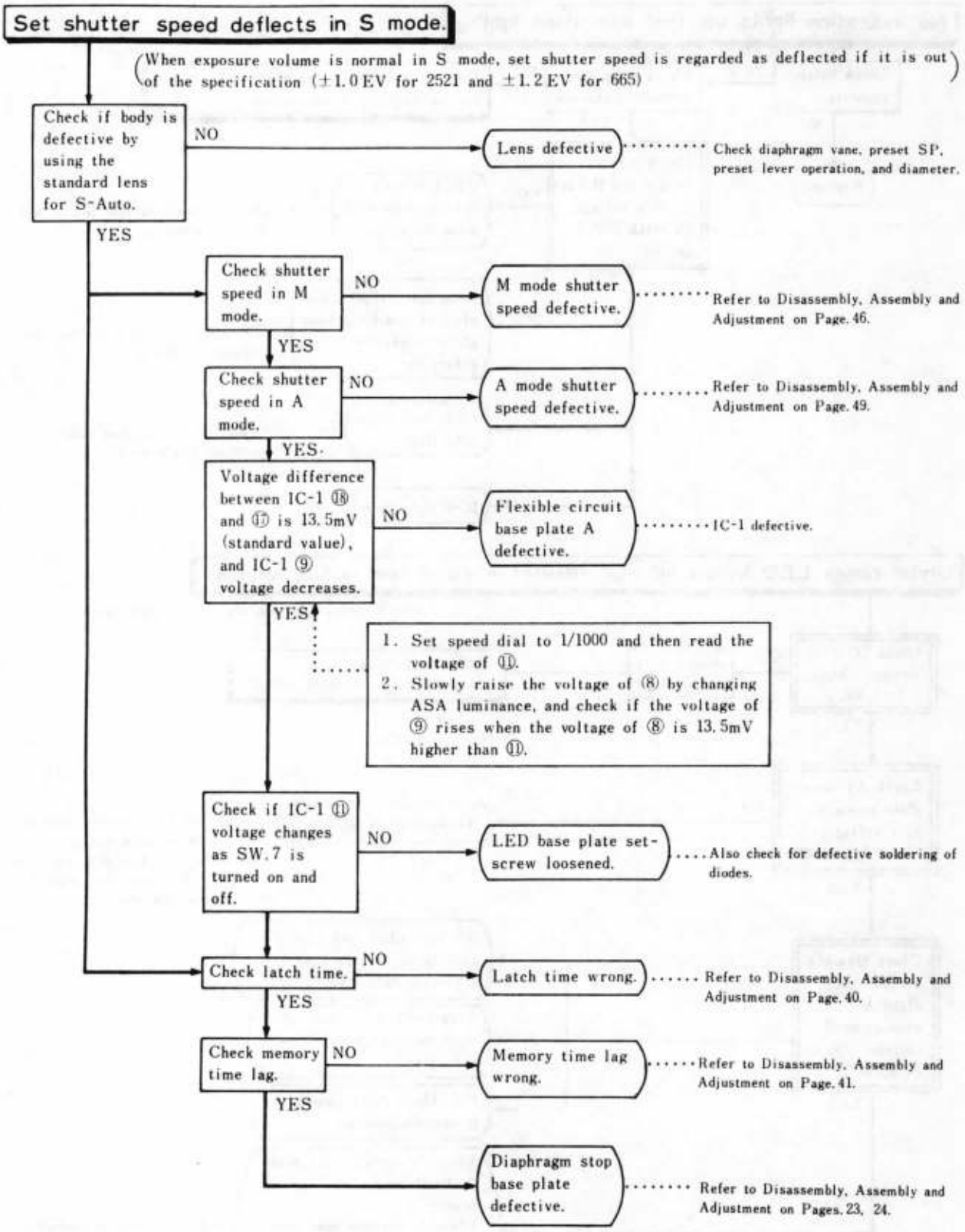
No indication lights up (incl. intermittent lighting)


Check battery capacity.
YES
Check magnetic release operation.
NO
Check for defective magnetic release and for no lighting of indication.
NO
YES
Replace.
Check circuit base plate B R_{64} ⊖ side voltage: 0V with SW.5 at ON.
NO
SW.7 contact defective or lead wire defective.
Check for burnt-out lead (white) and defective soldering.
YES
Cord for circuit base plate B and LED base plate connection, defective.
Check for burnt-out lead (blue) and defective soldering.
LED base plate defective.
Check IC-2 ⑦ and lead (blue) soldered part pattern.
IC-2 defective.

Under-range LED keeps lighting. (Related to shutter open in A, S modes

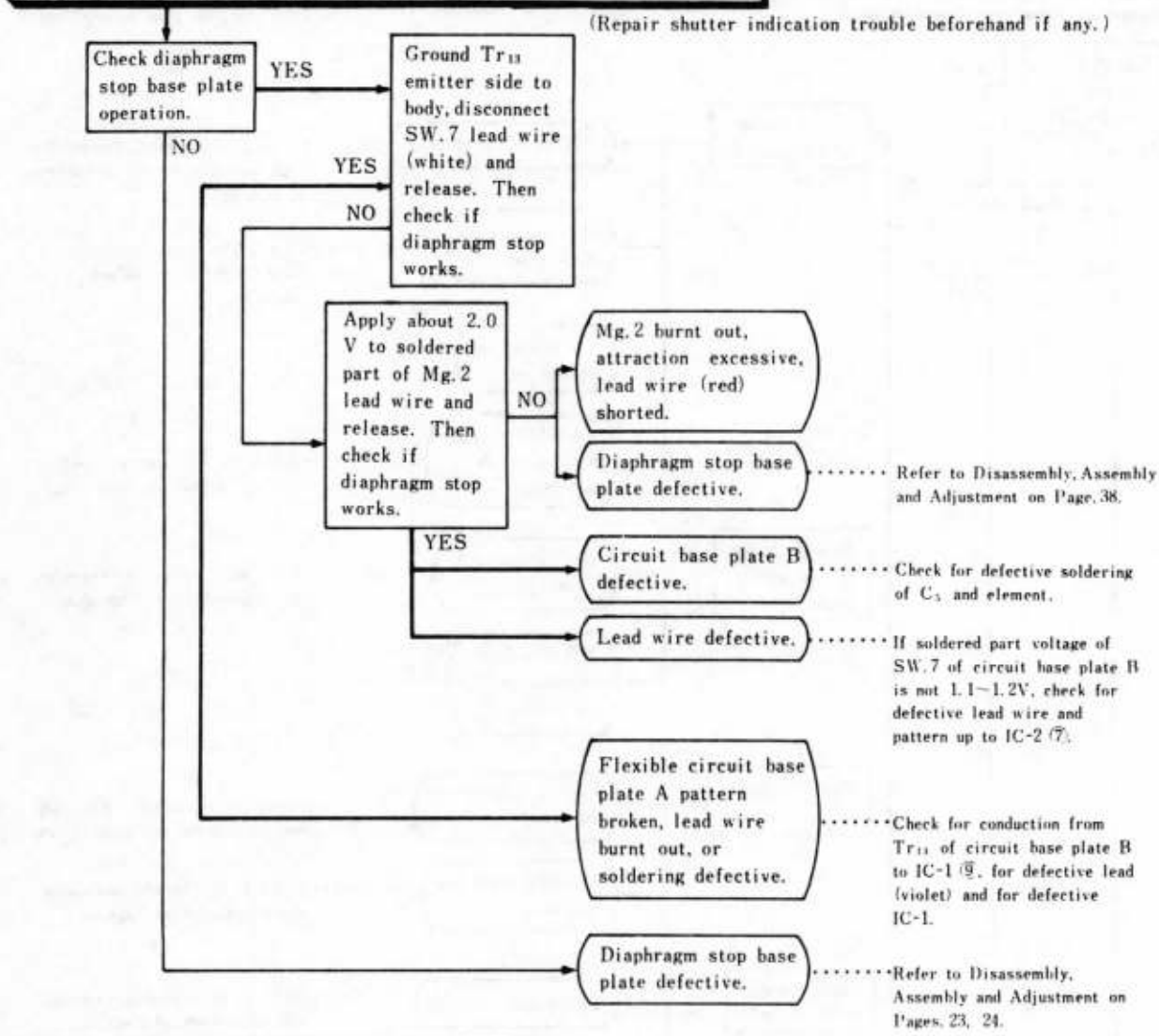
(LED ▼ keeps lighting even in brighter mode)


Check IC-1 ⑧ voltage: About 1.1~1.4V.
NO
About 1.0V or less.
Shutter defective. Check for "open in A, S modes".
YES
Check AV base plate common part voltage: About 1.1~1.4V.
NO
AV base plate defective.
Check for base plate cracking, defective brush contact. Check AV base plate and flexible circuit base plate connection soldering.
YES
Check flexible circuit base plate A-B connection ⑦ voltage: (Same as above).
NO
AV base plate and flexible circuit base plate connection soldering defective.
Flexible circuit base plate A-B connection soldering defective.
Flexible circuit base plate B pattern broken.
YES
Flexible circuit base plate A, LED base plate pattern broken.
Flexible circuit base plate A and LED base plate connection soldering defective.
IC-2 ⑱ soldering defective.
Check voltage or conduction from flexible circuit base plate A-B connection ⑦ to IC-2 ⑱.
Flexible circuit base plate A defective.
LED base plate defective.


Set shutter speed deflects in S mode.
(When exposure volume is normal in S mode, set shutter speed is regarded as deflected if it is out of the specification (±1.0 EV for 2521 and ±1.2 EV for 665))
Check if body is defective by using the standard lens for S-Auto.
NO
Lens defective
Check diaphragm vane, preset SP, preset lever operation, and diameter.
YES
Check shutter speed in M mode.
NO
M mode shutter speed defective.
Refer to Disassembly, Assembly and Adjustment on Page. 46.
YES
Check shutter speed in A mode.
NO
A mode shutter speed defective.
Refer to Disassembly, Assembly and Adjustment on Page. 49.
YES
Voltage difference between IC-1 ⑱ and ⑰ is 13.5mV (standard value), and IC-1 ⑨ voltage decreases.
NO
Flexible circuit base plate A defective.
IC-1 defective.
YES
1. Set speed dial to 1/1000 and then read the voltage of ⑪.
2. Slowly raise the voltage of ⑧ by changing ASA luminance, and check if the voltage of ⑨ rises when the voltage of ⑧ is 13.5mV higher than ⑪.
Check if IC-1 ⑪ voltage changes as SW. 7 is turned on and off.
NO
LED base plate set-screw loosened.
Also check for defective soldering of diodes.
Check latch time.
NO
Latch time wrong.
Refer to Disassembly, Assembly and Adjustment on Page. 40.
YES
Check memory time lag.
NO
Memory time lag wrong.
Refer to Disassembly, Assembly and Adjustment on Page. 41.
YES
Diaphragm stop base plate defective.
Refer to Disassembly, Assembly and Adjustment on Pages. 23, 24.

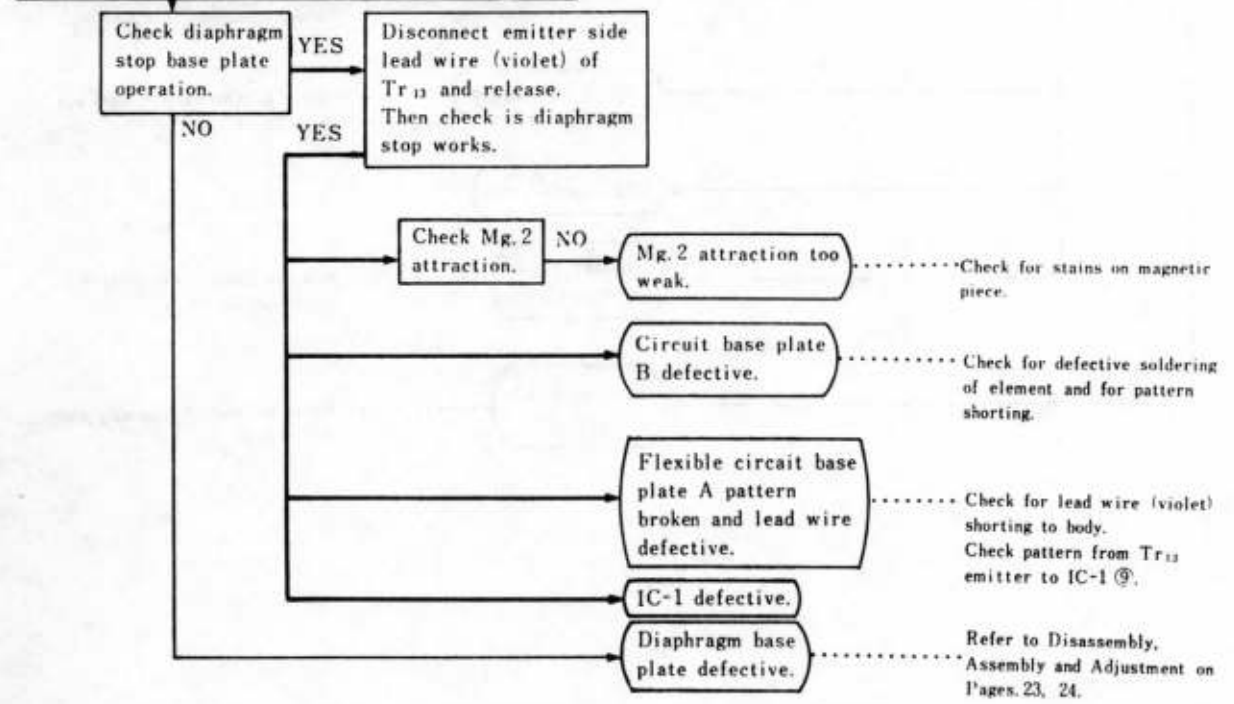
Diaphragm stop doesn't work in S mode (All to minimum)

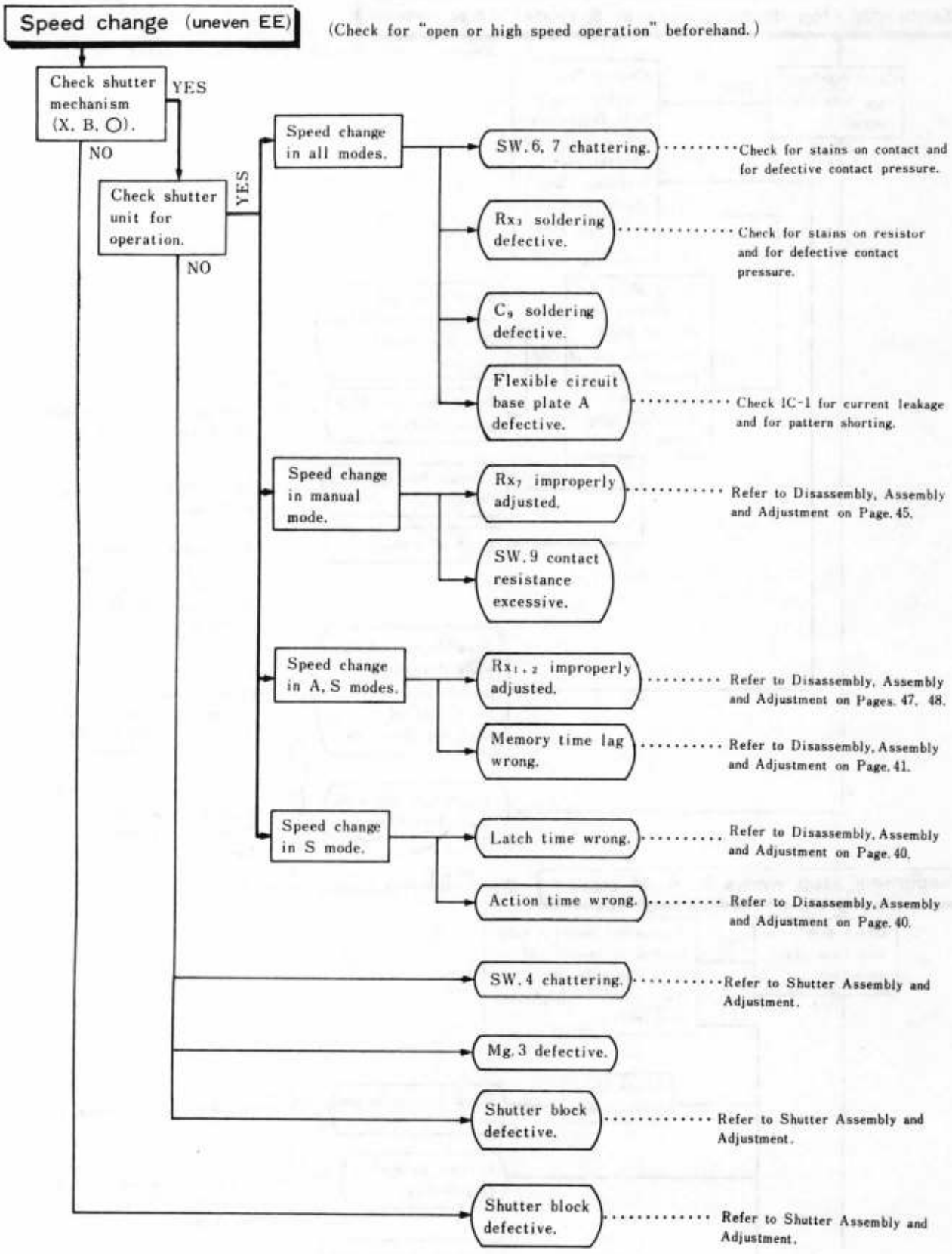
(Repair shutter indication trouble beforehand if any.)


Check diaphragm stop base plate operation.
YES
Ground Tr_{13} emitter side to body, disconnect SW.7 lead wire (white) and release. Then check if diaphragm stop works.
NO
YES
NO
Apply about 2.0 V to soldered part of Mg.2 lead wire and release. Then check if diaphragm stop works.
NO
Mg.2 burnt out, attraction excessive, lead wire (red) shorted.
Diaphragm stop base plate defective.
Refer to Disassembly, Assembly and Adjustment on Page. 38.
YES
Circuit base plate B defective.
Check for defective soldering of C_5 and element.
Lead wire defective.
If soldered part voltage of SW.7 of circuit base plate B is not 1.1~1.2V, check for defective lead wire and pattern up to IC-2 ⑦.
Flexible circuit base plate A pattern broken, lead wire burnt out, or soldering defective.
Check for conduction from Tr_{13} of circuit base plate B to IC-1 ⑨, for defective lead (violet) and for defective IC-1.
Diaphragm stop base plate defective.
Refer to Disassembly, Assembly and Adjustment on Pages. 23, 24.

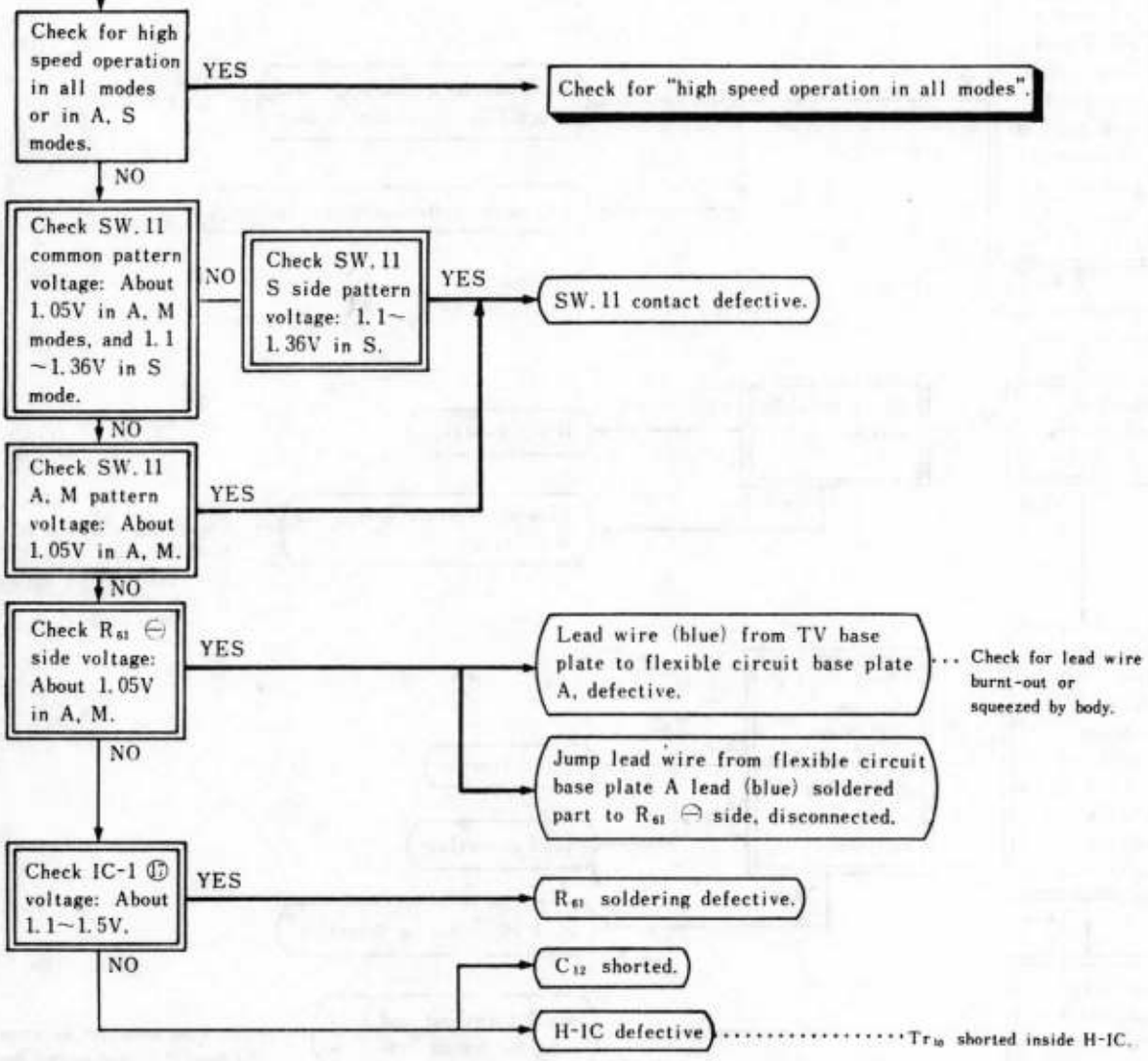
Diaphragm stop works in A, M modes.

(Repair shutter indication trouble beforehand if any.)

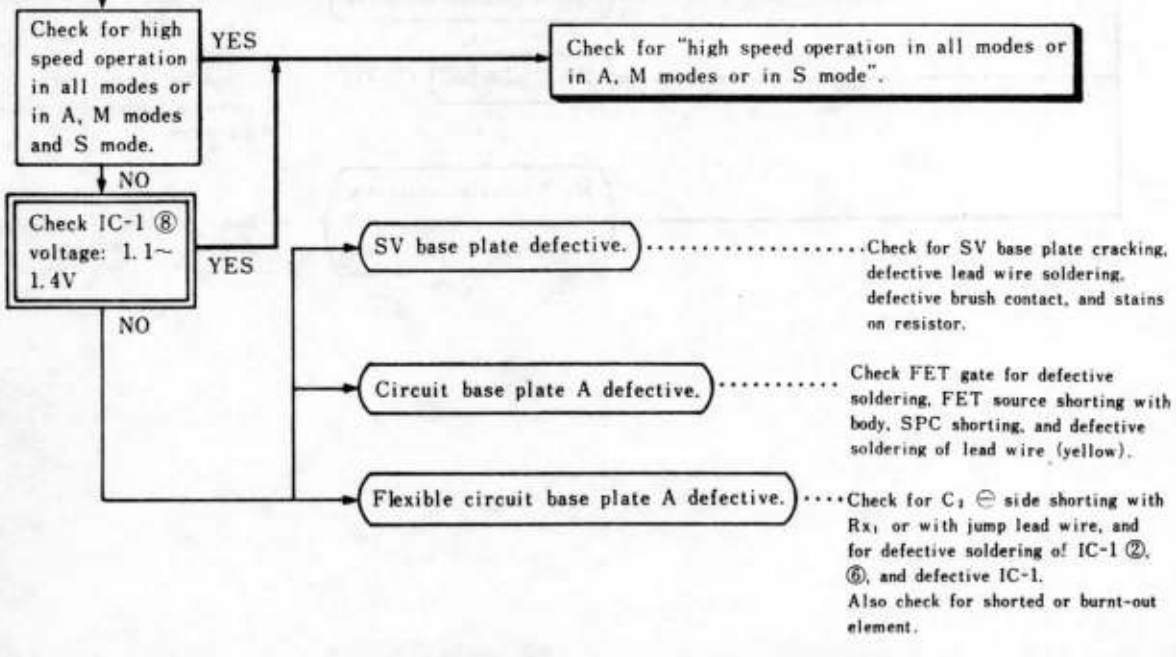

Check diaphragm stop base plate operation.
YES
Disconnect emitter side lead wire (violet) of Tr_{13} and release. Then check is diaphragm stop works.
NO
YES
Check Mg.2 attraction.
NO
Mg.2 attraction too weak.
Check for stains on magnetic piece.
Circuit base plate B defective.
Check for defective soldering of element and for pattern shorting.
Flexible circuit base plate A pattern broken and lead wire defective.
Check for lead wire (violet) shorting to body.
Check pattern from Tr_{13} emitter to IC-1 ⑨.
IC-1 defective.
Diaphragm base plate defective.
Refer to Disassembly, Assembly and Adjustment on Pages. 23, 24.

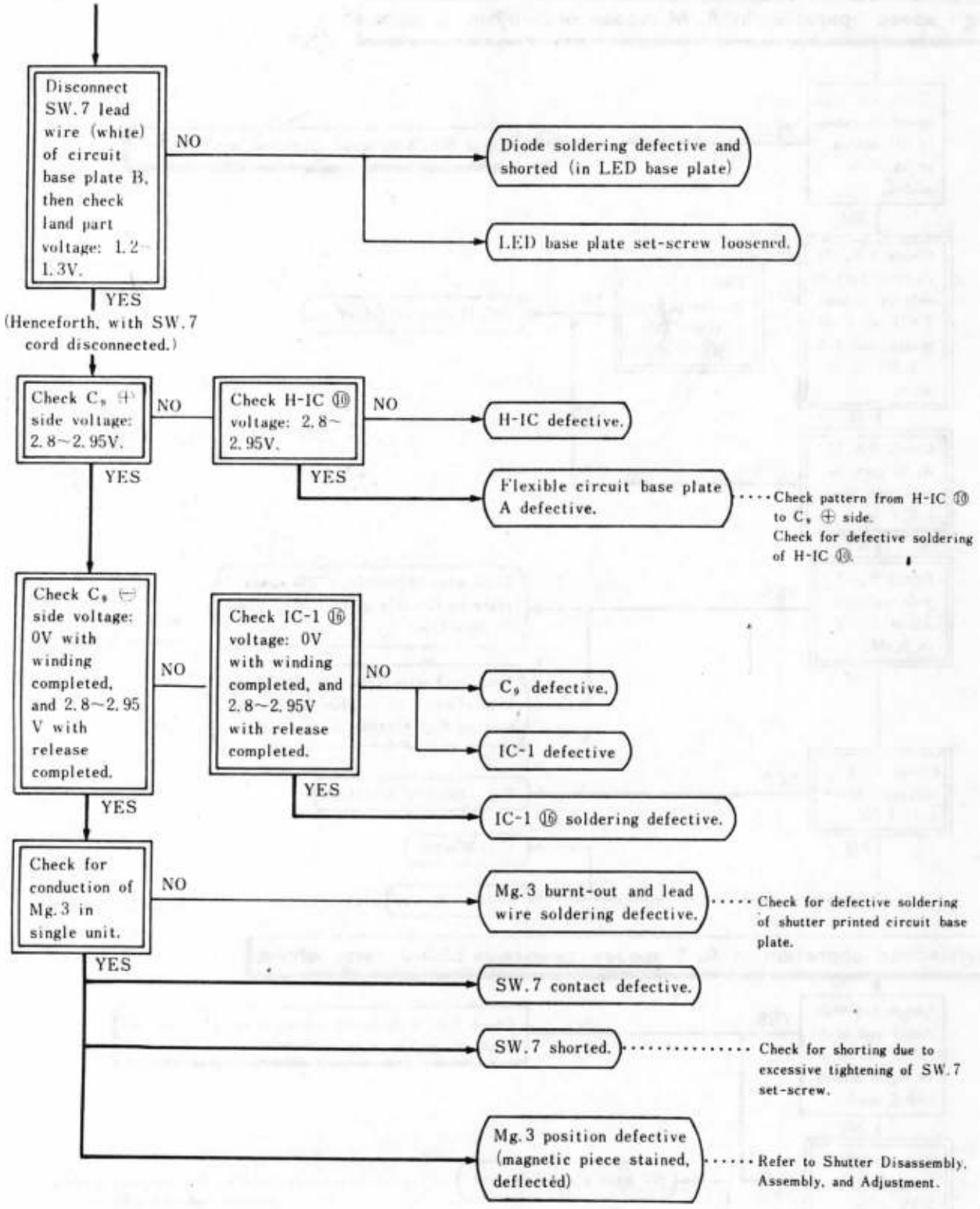

Speed change (uneven EE)
(Check for "open or high speed operation" beforehand.)
Check shutter mechanism (X, B, ○).
YES
NO
Check shutter unit for operation.
YES
NO
Speed change in all modes.
SW. 6, 7 chattering.
Check for stains on contact and for defective contact pressure.
Rx3 soldering defective.
Check for stains on resistor and for defective contact pressure.
C9 soldering defective.
Flexible circuit base plate A defective.
Check IC-1 for current leakage and for pattern shorting.
Speed change in manual mode.
Rx7 improperly adjusted.
Refer to Disassembly, Assembly and Adjustment on Page. 45.
SW. 9 contact resistance excessive.
Speed change in A, S modes.
Rx1, 2 improperly adjusted.
Refer to Disassembly, Assembly and Adjustment on Pages. 47, 48.
Memory time lag wrong.
Refer to Disassembly, Assembly and Adjustment on Page. 41.
Speed change in S mode.
Latch time wrong.
Refer to Disassembly, Assembly and Adjustment on Page. 40.
Action time wrong.
Refer to Disassembly, Assembly and Adjustment on Page. 40.
SW. 4 chattering.
Refer to Shutter Assembly and Adjustment.
Mg. 3 defective.
Shutter block defective.
Refer to Shutter Assembly and Adjustment.
Shutter block defective.
Refer to Shutter Assembly and Adjustment.

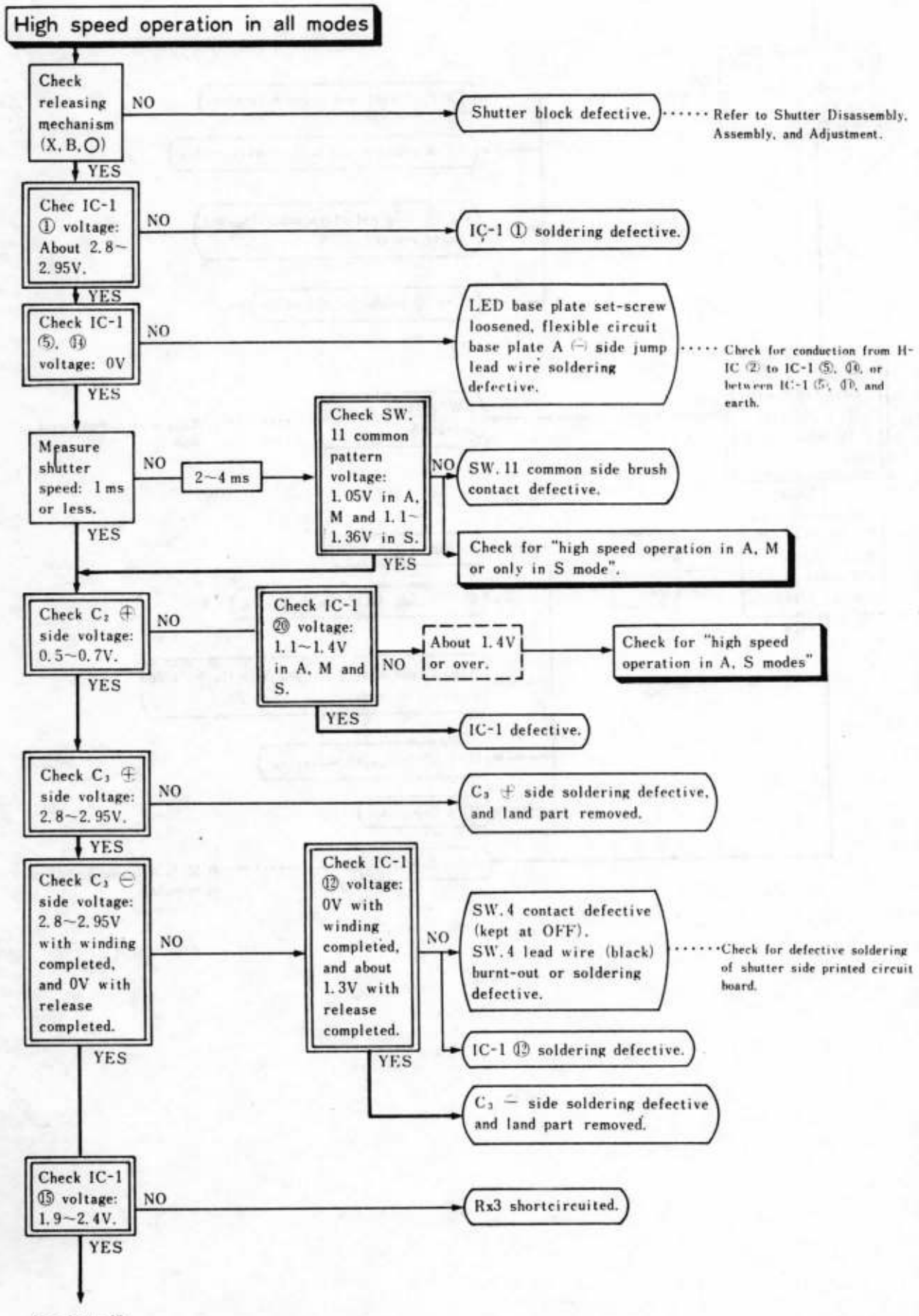
High speed operation in A, M modes or only in S mode.


Check for high speed operation in all modes or in A, S modes.
YES
Check for "high speed operation in all modes".
NO
Check SW. 11 common pattern voltage: About 1.05V in A, M modes, and 1.1 ~1.36V in S mode.
NO
Check SW. 11 S side pattern voltage: 1.1~ 1.36V in S.
YES
SW. 11 contact defective.
NO
Check SW. 11 A, M pattern voltage: About 1.05V in A, M.
YES
NO
Check R_{61} ⊖ side voltage: About 1.05V in A, M.
YES
Lead wire (blue) from TV base plate to flexible circuit base plate A, defective.
Check for lead wire burnt-out or squeezed by body.
Jump lead wire from flexible circuit base plate A lead (blue) soldered part to R_{61} ⊖ side, disconnected.
NO
Check IC-1 ⑰ voltage: About 1.1~1.5V.
YES
R_{61} soldering defective.
NO
C_{12} shorted.
H-IC defective
Tr_{10} shorted inside H-IC.

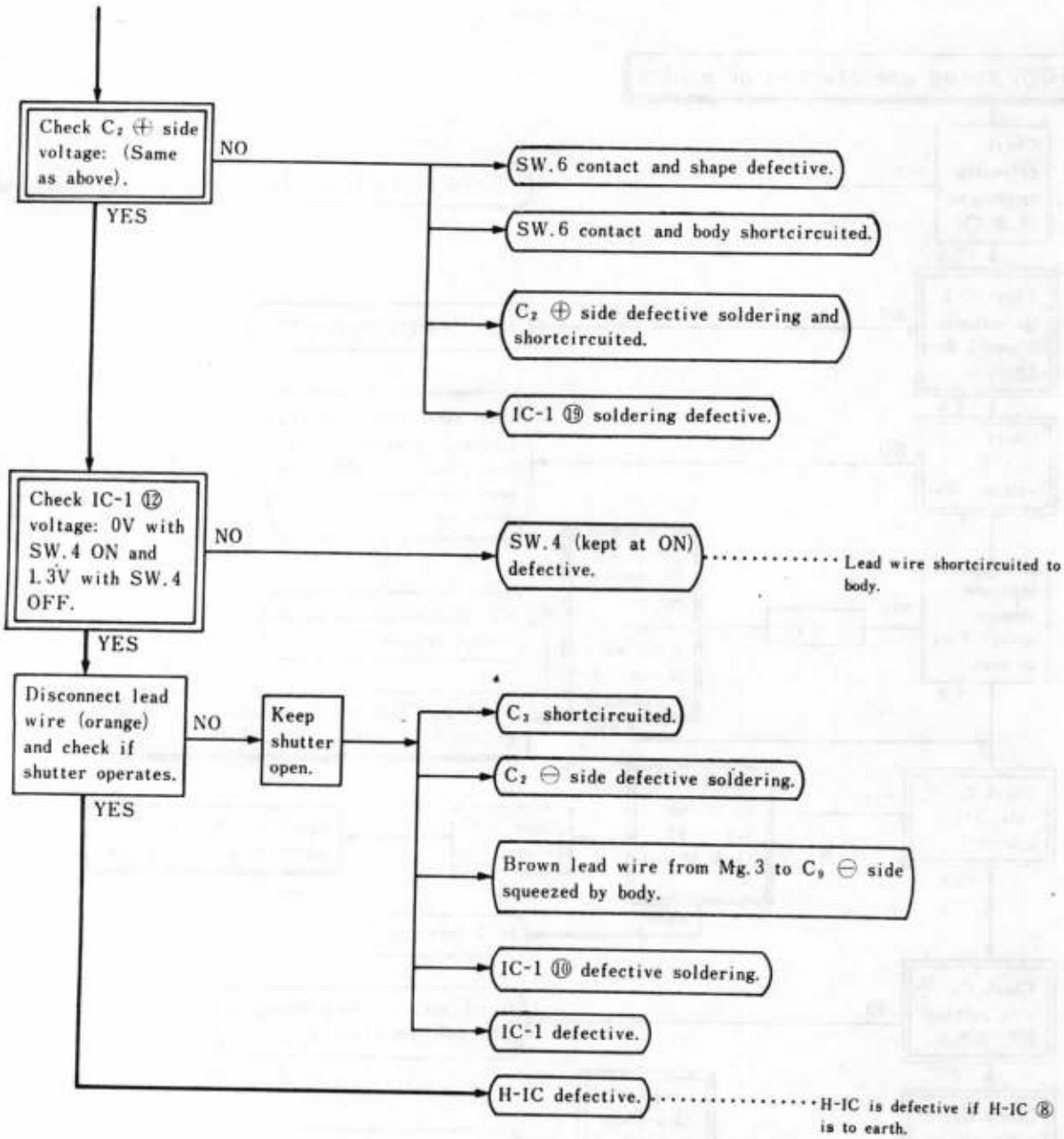
High speed operation in A, S modes (over-range LED ▲ keeps lighting)

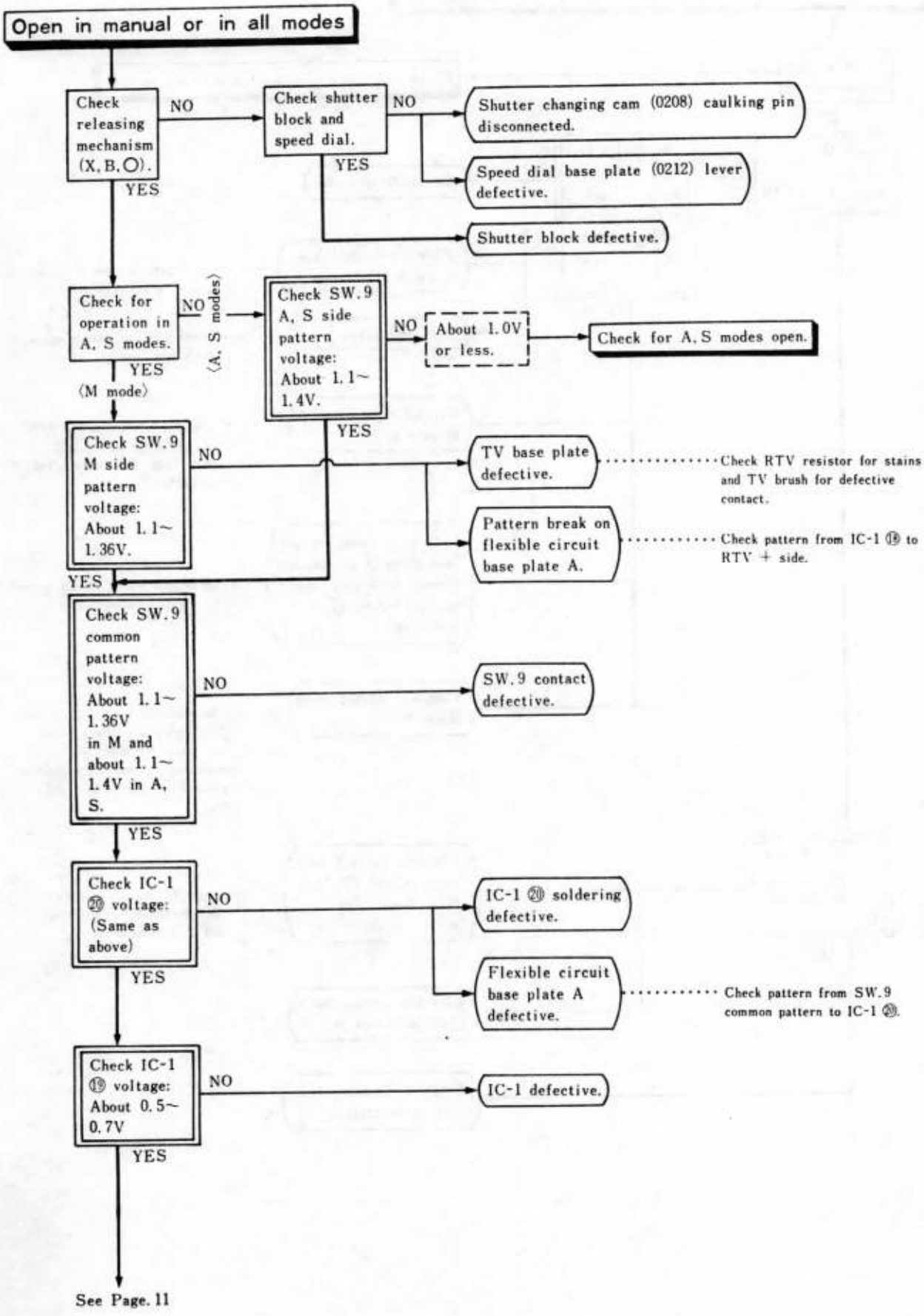

Check for high speed operation in all modes or in A, M modes and S mode.
YES
Check for "high speed operation in all modes or in A, M modes or in S mode".
NO
Check IC-1 ⑧ voltage: 1.1~ 1.4V
YES
NO
SV base plate defective.
Check for SV base plate cracking, defective lead wire soldering, defective brush contact, and stains on resistor.
Circuit base plate A defective.
Check FET gate for defective soldering, FET source shorting with body, SPC shorting, and defective soldering of lead wire (yellow).
Flexible circuit base plate A defective.
Check for C_3 ⊖ side shorting with Rx_1 or with jump lead wire, and for defective soldering of IC-1 ②, ⑥, and defective IC-1.
Also check for shorted or burnt-out element.


Disconnect SW.7 lead wire (white) of circuit base plate B, then check land part voltage: 1.2~1.3V.
NO
Diode soldering defective and shorted (in LED base plate)
LED base plate set-screw loosened.
YES
(Henceforth, with SW.7 cord disconnected.)
Check C_9 ⊕ side voltage: 2.8~2.95V.
NO
Check H-IC ⑩ voltage: 2.8~2.95V.
NO
H-IC defective.
YES
YES
Flexible circuit base plate A defective.
Check pattern from H-IC ⑩ to C_9 ⊕ side.
Check for defective soldering of H-IC ⑩.
Check C_9 ⊖ side voltage: 0V with winding completed, and 2.8~2.95 V with release completed.
NO
Check IC-1 ⑯ voltage: 0V with winding completed, and 2.8~2.95V with release completed.
NO
C_9 defective.
IC-1 defective
YES
IC-1 ⑯ soldering defective.
YES
Check for conduction of Mg.3 in single unit.
NO
Mg.3 burnt-out and lead wire soldering defective.
Check for defective soldering of shutter printed circuit base plate.
YES
SW.7 contact defective.
SW.7 shorted.
Check for shorting due to excessive tightening of SW.7 set-screw.
Mg.3 position defective (magnetic piece stained, deflected)
Refer to Shutter Disassembly, Assembly, and Adjustment.

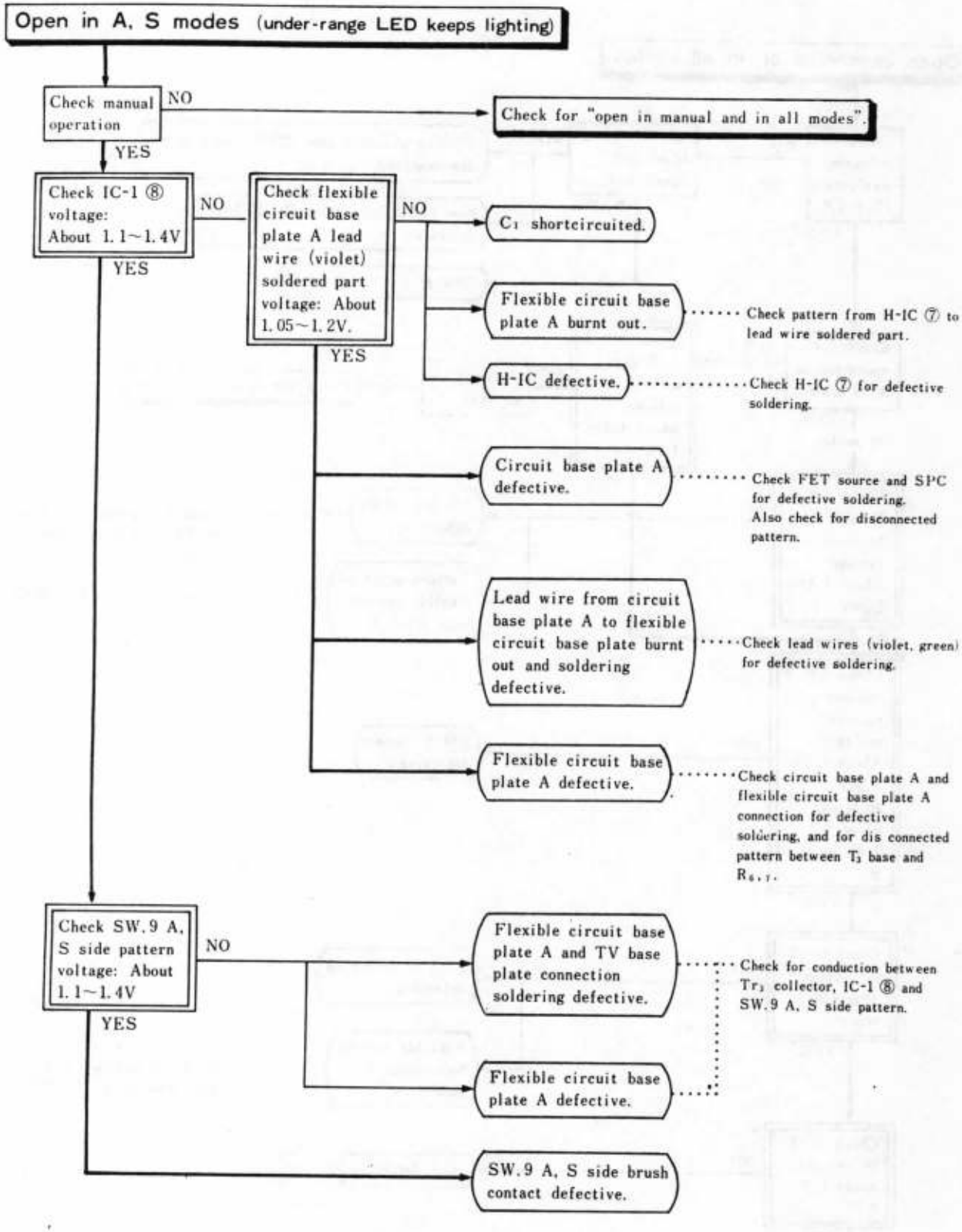

High speed operation in all modes
Check releasing mechanism (X, B, O)
NO
Shutter block defective.
Refer to Shutter Disassembly, Assembly, and Adjustment.
YES
Chec IC-1 ① voltage: About 2.8~2.95V.
NO
IC-1 ① soldering defective.
YES
Check IC-1 ⑤, ⑩ voltage: 0V
NO
LED base plate set-screw loosened, flexible circuit base plate A ⊖ side jump lead wire soldering defective.
Check for conduction from H-IC ② to IC-1 ⑤, ⑩, or between IC-1 ⑤, ⑩, and earth.
YES
Measure shutter speed: 1 ms or less.
NO
2~4 ms
Check SW. 11 common pattern voltage: 1.05V in A, M and 1.1~1.36V in S.
NO
SW. 11 common side brush contact defective.
Check for "high speed operation in A, M or only in S mode".
YES
Check C₂ ⊕ side voltage: 0.5~0.7V.
NO
Check IC-1 ⑳ voltage: 1.1~1.4V in A, M and S.
About 1.4V or over.
NO
Check for "high speed operation in A, S modes"
YES
IC-1 defective.
Check C₃ ⊕ side voltage: 2.8~2.95V.
NO
C₃ ⊕ side soldering defective, and land part removed.
YES
Check C₃ ⊖ side voltage: 2.8~2.95V with winding completed, and 0V with release completed.
NO
Check IC-1 ⑫ voltage: 0V with winding completed, and about 1.3V with release completed.
NO
SW. 4 contact defective (kept at OFF). SW. 4 lead wire (black) burnt-out or soldering defective.
Check for defective soldering of shutter side printed circuit board.
IC-1 ⑫ soldering defective.
YES
C₃ ⊖ side soldering defective and land part removed.
YES
Check IC-1 ⑮ voltage: 1.9~2.4V.
NO
Rx3 shortcircuited.
YES

See Page. 13.

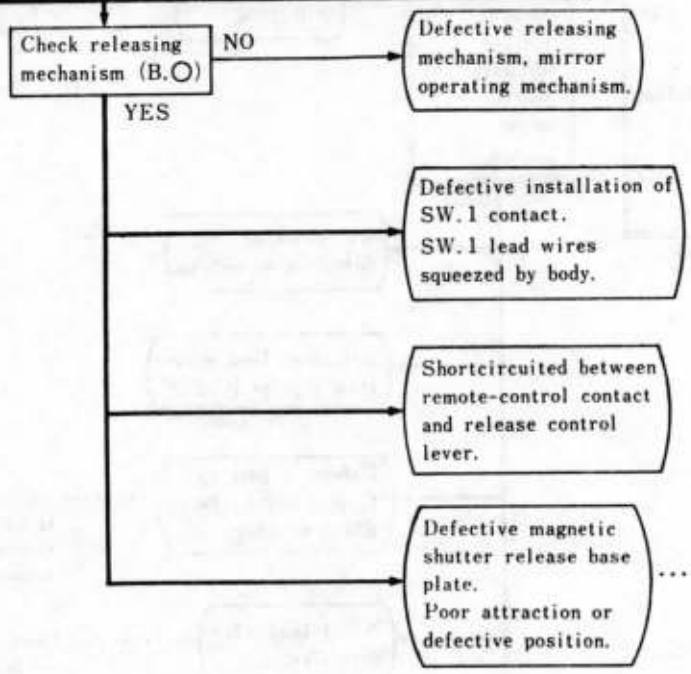

Check C_2 ⊕ side voltage: (Same as above).
NO
YES
SW.6 contact and shape defective.
SW.6 contact and body shortcircuited.
C_2 ⊕ side defective soldering and shortcircuited.
IC-1 ⑲ soldering defective.
Check IC-1 ⑫ voltage: 0V with SW.4 ON and 1.3V with SW.4 OFF.
NO
SW.4 (kept at ON) defective.
Lead wire shortcircuited to body.
YES
Disconnect lead wire (orange) and check if shutter operates.
NO
Keep shutter open.
C_2 shortcircuited.
C_2 ⊖ side defective soldering.
Brown lead wire from Mg.3 to C_9 ⊖ side squeezed by body.
IC-1 ⑩ defective soldering.
IC-1 defective.
YES
H-IC defective.
H-IC is defective if H-IC ⑧ is to earth.


Open in manual or in all modes
Check releasing mechanism (X, B, ○).
NO
YES
Check shutter block and speed dial.
NO
YES
Shutter changing cam (0208) caulking pin disconnected.
Speed dial base plate (0212) lever defective.
Shutter block defective.
Check for operation in A, S modes.
NO
YES
〈A, S modes〉
〈M mode〉
Check SW.9 A, S side pattern voltage: About 1.1~1.4V.
NO
YES
About 1.0V or less.
Check for A, S modes open.
Check SW.9 M side pattern voltage: About 1.1~1.36V.
NO
YES
TV base plate defective.
Check RTV resistor for stains and TV brush for defective contact.
Pattern break on flexible circuit base plate A.
Check pattern from IC-1 ⑲ to RTV + side.
Check SW.9 common pattern voltage: About 1.1~1.36V in M and about 1.1~1.4V in A, S.
NO
YES
SW.9 contact defective.
Check IC-1 ⑳ voltage: (Same as above)
NO
YES
IC-1 ⑳ soldering defective.
Flexible circuit base plate A defective.
Check pattern from SW.9 common pattern to IC-1 ⑳.
Check IC-1 ⑲ voltage: About 0.5~0.7V
NO
YES
IC-1 defective.

See Page. 11

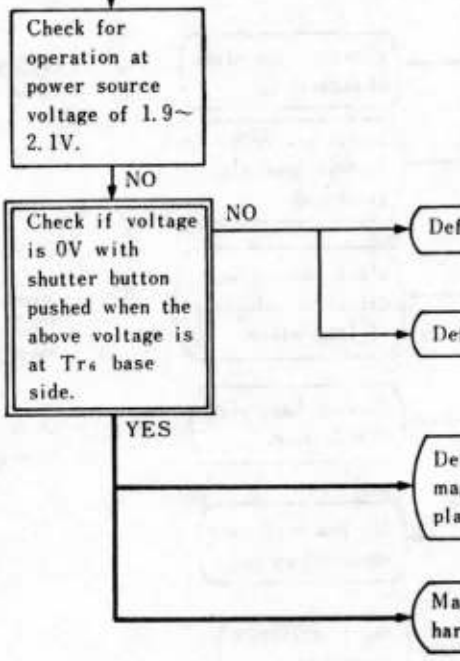

Open in A, S modes (under-range LED keeps lighting)
Check manual operation
NO
Check for "open in manual and in all modes".
YES
Check IC-1 ⑧ voltage: About 1.1~1.4V
NO
Check flexible circuit base plate A lead wire (violet) soldered part voltage: About 1.05~1.2V.
NO
C1 shortcircuited.
Flexible circuit base plate A burnt out.
Check pattern from H-IC ⑦ to lead wire soldered part.
H-IC defective.
Check H-IC ⑦ for defective soldering.
YES
Circuit base plate A defective.
Check FET source and SPC for defective soldering. Also check for disconnected pattern.
Lead wire from circuit base plate A to flexible circuit base plate burnt out and soldering defective.
Check lead wires (violet, green) for defective soldering.
Flexible circuit base plate A defective.
Check circuit base plate A and flexible circuit base plate A connection for defective soldering, and for dis connected pattern between T3 base and R6,7.
YES
Check SW.9 A, S side pattern voltage: About 1.1~1.4V
NO
Flexible circuit base plate A and TV base plate connection soldering defective.
Check for conduction between Tr3 collector, IC-1 ⑧ and SW.9 A, S side pattern.
Flexible circuit base plate A defective.
YES
SW.9 A, S side brush contact defective.

It releases halfway when shutter button is pushed to wind, or releases when shutter button is not pushed.


Check releasing mechanism (B.○)
NO
Defective releasing mechanism, mirror operating mechanism.
YES
Defective installation of SW. 1 contact. SW. 1 lead wires squeezed by body.
Shortcircuited between remote-control contact and release control lever.
Defective magnetic shutter release base plate. Poor attraction or defective position.

..... Refer to Disassembly, Assembly, Adjustment on Pages. 23 and 24.

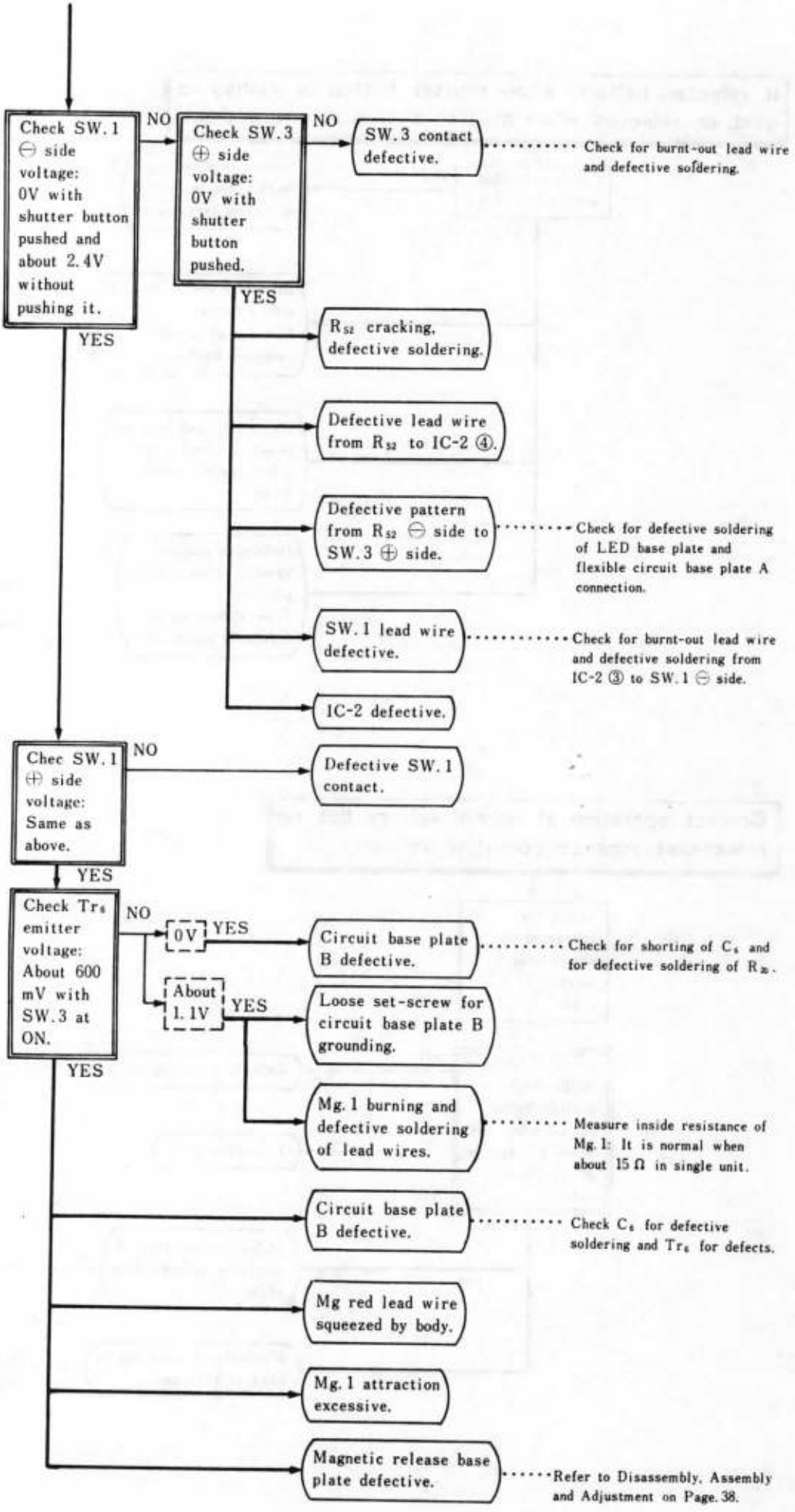
Correct operation at normal voltage but no release at minimum operating voltage.

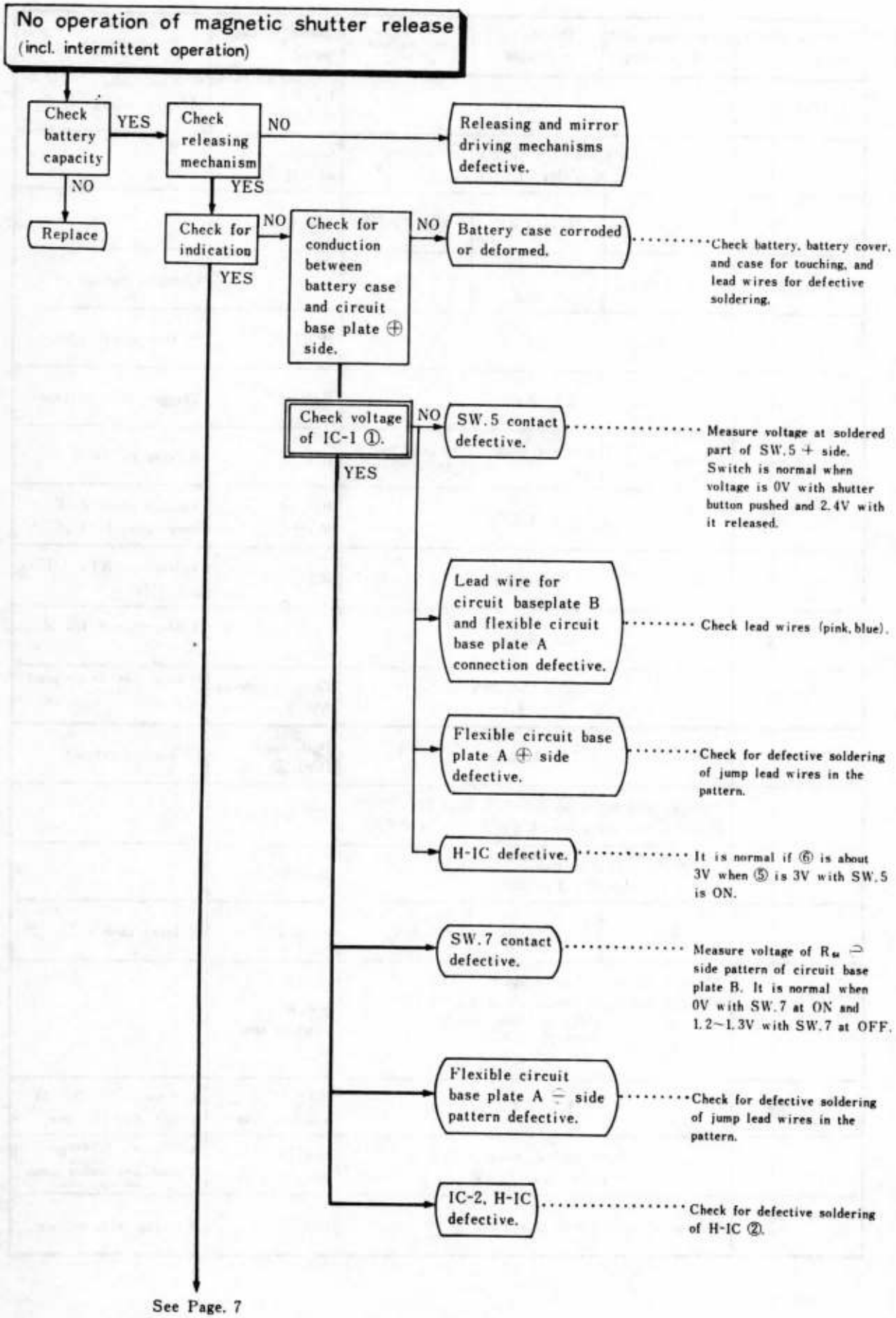

Check for operation at power source voltage of 1.9~2.1V.
NO
Check if voltage is 0V with shutter button pushed when the above voltage is at Tr6 base side.
NO
Defective setting of R52.
Defective IC-2.
YES
Defective position of magnetic release base plate.
Magnetic release Mg is hard to release.

..... Refer to Disassembly, Assembly and Adjustment on Page. 56.

..... Refer to Disassembly, Assembly and Adjustment on Page. 24.

..... Sticking of viscous matters like oil, fats, etc.


Check SW. 1 ⊖ side voltage: 0V with shutter button pushed and about 2.4V without pushing it.
NO
Check SW. 3 ⊕ side voltage: 0V with shutter button pushed.
NO
SW. 3 contact defective.
Check for burnt-out lead wire and defective soldering.
YES
R_{S2} cracking, defective soldering.
Defective lead wire from R_{S2} to IC-2 ④.
Defective pattern from R_{S2} ⊖ side to SW. 3 ⊕ side.
Check for defective soldering of LED base plate and flexible circuit base plate A connection.
SW. 1 lead wire defective.
Check for burnt-out lead wire and defective soldering from IC-2 ③ to SW. 1 ⊖ side.
IC-2 defective.
YES
Chec SW. 1 ⊕ side voltage: Same as above.
NO
Defective SW. 1 contact.
YES
Check Tr_6 emitter voltage: About 600 mV with SW. 3 at ON.
NO
0V
YES
Circuit base plate B defective.
Check for shorting of C_4 and for defective soldering of R_{20}.
About 1. 1V
YES
Loose set-screw for circuit base plate B grounding.
YES
Mg. 1 burning and defective soldering of lead wires.
Measure inside resistance of Mg. 1: It is normal when about 15 Ω in single unit.
Circuit base plate B defective.
Check C_4 for defective soldering and Tr_6 for defects.
Mg red lead wire squeezed by body.
Mg. 1 attraction excessive.
Magnetic release base plate defective.
Refer to Disassembly, Assembly and Adjustment on Page. 38.


No operation of magnetic shutter release
(incl. intermittent operation)
Check battery capacity
YES
Check releasing mechanism
NO
Releasing and mirror driving mechanisms defective.
NO
Replace
YES
Check for indication
NO
Check for conduction between battery case and circuit base plate ⊕ side.
NO
Battery case corroded or deformed.
Check battery, battery cover, and case for touching, and lead wires for defective soldering.
YES
Check voltage of IC-1 ①.
NO
SW.5 contact defective.
Measure voltage at soldered part of SW.5 + side. Switch is normal when voltage is 0V with shutter button pushed and 2.4V with it released.
YES
Lead wire for circuit baseplate B and flexible circuit base plate A connection defective.
Check lead wires (pink, blue).
Flexible circuit base plate A ⊕ side defective.
Check for defective soldering of jump lead wires in the pattern.
H-IC defective.
It is normal if ⑥ is about 3V when ⑤ is 3V with SW.5 is ON.
SW.7 contact defective.
Measure voltage of R₄₄ ⊃ side pattern of circuit base plate B. It is normal when 0V with SW.7 at ON and 1.2~1.3V with SW.7 at OFF.
Flexible circuit base plate A ⊖ side pattern defective.
Check for defective soldering of jump lead wires in the pattern.
IC-2, H-IC defective.
Check for defective soldering of H-IC ②.

See Page. 7

Voltage check point	Winding completed, before releasing	During exposure	After exposure	Same voltage point	Remarks
IC-1 ⑩	0.5~0.7V			C_2 ⊕ SW.6 ⊖	Memory voltage of C_2
⑪	S mode: 1.1~1.36V A, M modes: 1.0~1.1V			Common side of SW.11	
⑫	0 V	About 1.3V	About 1.3V	SW.4 ⊕	
⑬	2.8~2.95V	About 3→2.3→0V	0 V	C_3 ⊖	Charging voltage of C_3
⑭	0 V			H-IC ②	⊖ line of circuit
⑮	1.9~2.4V			Rx3 ⊖	Trigger level voltage
⑯	0 V	Several tens mV	Several tens mV	HIC ⑧	Related to SW.7
⑰	1.1~1.2V			Rx7 ⊖ R_{61} ⊕	Voltage about 0.2V lower than IC-1 ⑱.
⑱	1.33~1.36V			R_{56} ⊖	Voltage on RTV 1/1000 sec. side.
⑲	0.5~0.7V				Voltage about 1/2 of IC-1 ⑳.
⑳	M mode: 1.1~1.36V A, S modes: 1.1~1.4V			Common side of SW.9	M mode: Set shutter speed voltage A, S modes: Voltage of IC-⑱.
IC-2 ②	2.8~2.95V			H-IC ⑥, IC-1 ①, etc.	⊕ line of circuit
③	Several tens mV with SW.1, 3, 5 at ON. Power source voltage with SW.1, 3, 5 at OFF.			SW.1 ⊖	
④	0.4~0.5V with SW.3 at ON. 2.2~2.4V with SW.3 at OFF.			R_{52} ⊕	
⑦	0 V	1.2~1.3V	0 V	H-IC ⑫	Related to SW.7.
⑨	SW.8′ A, M modes: 2~2.5V SW.8′ S mode (no lens): about 1.1~2.2V 〃 MD 16: 200~300mV 〃 MD 22: 2.9~3V 〃 MD 32: 2.1~2.3V			SW.8′ common side	
⑩	1.1~1.4V			RAV common side	A, M modes: BV+SV−AV S mode: BV+SV−144mV
⑪	A, M modes: about 1.36V S mode: 1.1~1.36V			SW.13 common side	A, M modes: 1/1000 voltage S mode: Set shutter speed voltage
⑫	Voltage 12.6mV lower than IC-1 ⑧.			Rx4 ⊖	Warning level voltage.

8. Major check point voltages of IC terminals

Voltage values with SW. 5 (ON), power source voltage (3V), room temp. (25±2.5°C), and ⊖ side (grounded to body).

Voltage check point	Winding completed, before releasing	During exposure	After exposure	Same voltage point	Remarks
H-IC ①			V_1 min. 1.25V——▲ should light up. max. 1.5V——▲ should not go out. V_2 2.028V——▲ should go out. 0V——Second curtain should be released.		Camera side conditions when camera and strobo are connected.
②	0 V			C_2⊖, Rx2⊖ C_8⊖, etc.	⊖ line of circuit. From flexible circuit base plate A to body earth.
③, ④	SW.5 ON→0V SW.5 OFF→about 2.4V			SW.3⊕ SW.5⊕	
⑤	3 V			Battery ⊕, R_{18}⊕, R_{20}⊕	Power source voltage
⑥	2.8~2.95V			C_3⊕, R_{56}⊕ Rx3⊕, etc.	⊕ line of circuit
⑦	1.05~1.2V			C_1⊕ etc.	Reference voltage
⑧	0 V	Several tens mV	Several tens mV	IC-1 ⑮, M_3⊖	Related to SW.7
⑨	1.1~1.2V			Rx7⊕	Voltage on RTV 1 sec. side
⑩	0 V	2.8~2.95V	Several tens mV	Mg 3 ⊕	Related to SW.7
⑫	0 V	1.1~1.2V	0 V	IC-2 ⑦	Related to SW.7
⑬, ⑭	About 2.6V	2.8~2.95V	About 2.6V		
IC-1 ①	2.8~2.95V			H-IC ⑥	⊕ line of circuit
②	0.45~0.8V			FET-gate	Measure with HA-1.
③	About 0.2V			Rx2 ⊕	
④	About 0.7V			FET-source C_{10} ⊖	
⑤	0 V			HIC ②	⊖ line of circuit
⑥	1.05~1.25V			Blue lead of RSV	Light (BV) information
⑦	Voltage 0.16~0.17V lower than IC-1 ⑧.			Violet lead of RSV	
⑧	1.1~1.4V			Gray lead of RSV Tr_3 collector, Tr_4 emitter	Voltage of BV + SV
⑨	Voltage decreases when exposure control stop operates.				

7. Items of symptoms

Page.

A. Defective magnetic shutter release

1. No operation at all or intermittent ..... 6～7
2. It releases halfway when shutter button is pushed to wind, or releases when shutter button is not pushed 8
3. It correctly operates at normal voltage but not at minimum operating voltage 8

B. Defective shutter operation

1. Open in A, S modes (Related to what under-range LED ▼ keeps lighting.) 9
2. Shutter is kept open (released for a few seconds or over) in manual or in all modes ..... 10～11
3. High speed operation in all modes. (High speed operation means that shutter operates at a high speed over the entire speed range.) ..... 12～13
4. High speed operation in A, M modes or only in S mode 14
5. High speed operation in A, S modes. (Related to what over-range LED ▲ keeps lighting.) 14
6. Speed variation (EE and speed are uneven, deflected, or the like) 15
7. Diaphragm stop doesn't work in S mode. (All to minimum) 16
8. Diaphragm stop works in A, M modes. (Kept released without stopping) 16
9. Set shutter speed deflects in S mode 17
10. Defective exposure on image 25

C. Defective indications

1. No lighting at all or intermittent 18
2. Under-range LED keeps lighting. (Shutter is open in A, S modes.) 18
3. Over-range LED keeps lighting. (Shutter operates at a high speed in A, S modes.) 19
4. With MD lens attached, indication skips to under range LED in A, M modes. (Defective operation.)
   With MD lens (2521) attached, F32 and F22 light up in S mode ..... 20～21
5. Unstable indication (partial failure of lighting or excessive lighting of LED) 21
6. Over-range LED doesn't blink with the strobo fully charged 22
7. Over-range LED doesn't blink at ×, ○. 22
8. Deflected indication 25

D. Too early exhaustion of battery 23

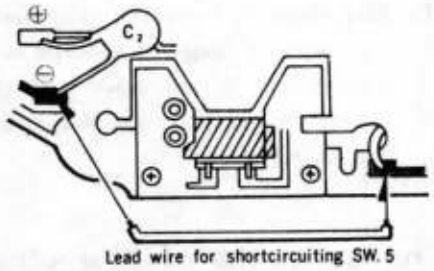
E. Defective tuning with exclusive strobo 24

F. Defective winder coupling 24

4. How to shortcircuit SW. 5

SW. 5 turns ON when shutter button stroke comes to 0.4 mm. So, it is practical to make the switch shortcircuited when checking the voltage to find the cause of a trouble.
At that time, connect a lead wire as illustrated.

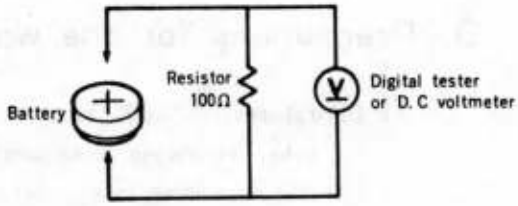
Note: When SW. 5 is shortcircuited, 7~9 mA will be consumed at all times for the light measuring circuit. Therefore, use a constant voltage DC power or ST-5101 power source.



Lead wire for shortcircuiting SW. 5

5. Battery capacity checking method

1. Connect a 100Ω resistor to the battery at 25±2.5°C as illustrated. Also, connect a digital tester or voltmeter in parallel with the resistor and then measure the voltage.
   The measurement should be done quickly.
2. The battery is normal if the measured voltage is over 1.4 V.



6. How to use the Trouble Shooting Chart

1. The chart includes the check points in detail ranging from the appearance of symptoms to the finding of causes.
2. The voltage at each check point corresponds to the voltage when SW. 5 is ON with winding completed (before release): the minus (−) side is grounded to the body.
3. For other symptoms than "magnetic shutter release doesn't operate", carry out the checks presupposing that the magnetic shutter release operates.
4. The indications in the trouble shooting chart are Symptom, Check point, Normal voltage at check point, Defective voltage at check point, and Possible cause.
   Dashed lines stand for checking methods and fefects in detail.

Trouble Shooting Chart

1. How to use the Trouble Shooting Chart

1. This chart includes the symptoms and causes of troubles on the camera side.
2. Even when a symptom appears on the camera side, the trouble is not always on the camera side in connection with the replacement lens, winder or exclusive strobo. Therefore, carefully check for operations related to the accessories before using this chart.

2. The contents of the chart

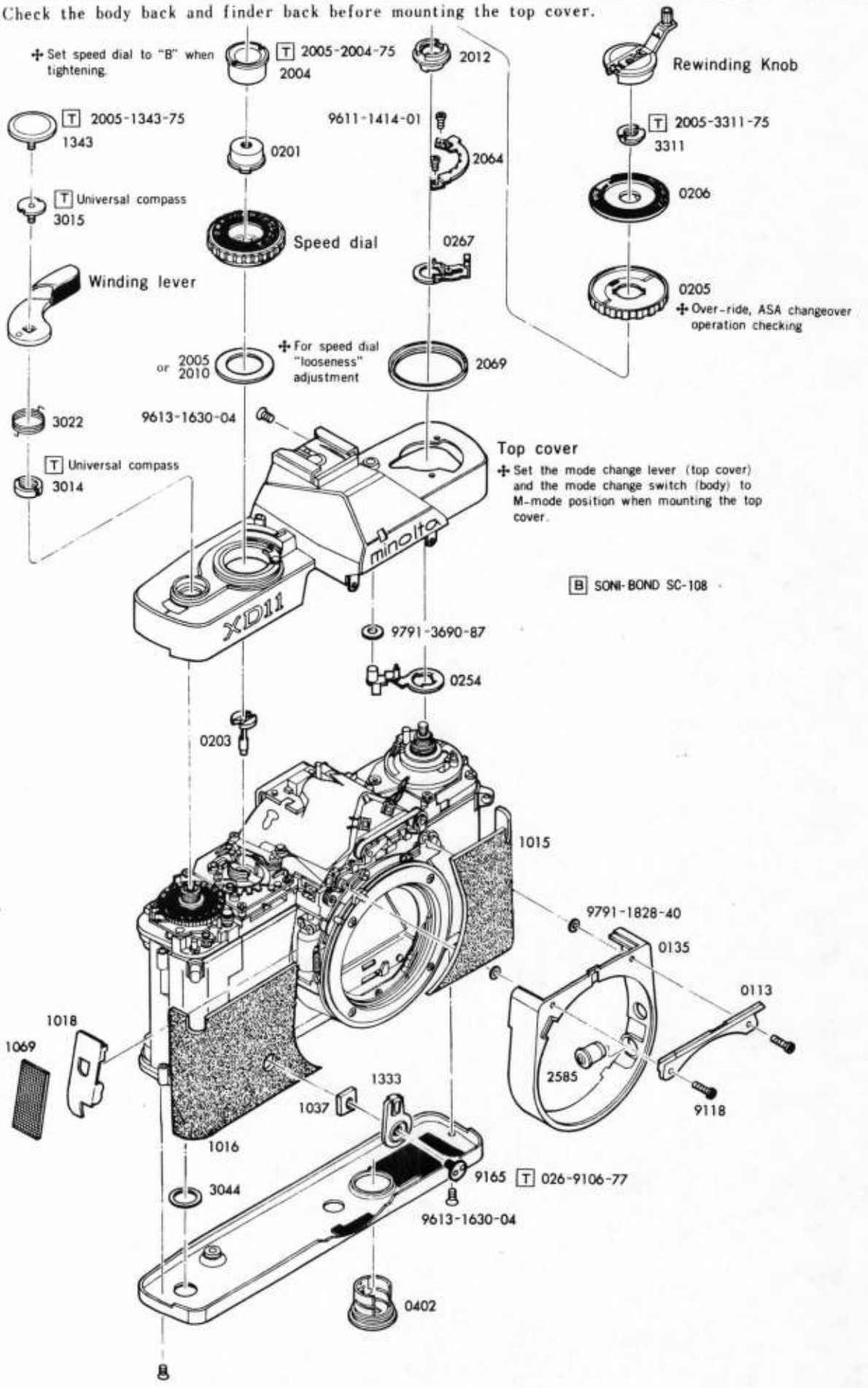
1. Mentioned in this chart are only individual patterns and these cannot cover all possible causes.
   Regarding multiple causes, carry out the all-round investigation of the troubles.
2. The chart mainly includes electrical causes and partially mechanical causes.

3. Precautions for the work

1. Digital tester (2507) is to be used as the measuring instrument. It is also allowed to use other measuring instruments when the input impedance exceeds 10 MΩ.
2. Use the measuring instrument to check for voltages, and a tester of less than 3 V to check for current conduction.
3. It can be predicated that troubles of electric parts such as IC, diodes, transistors, resistors, capacitors, etc. seldom occur. It is therefore practical to put emphasis on checking for defective soldering of lead wires and electric parts, defective switches, etc.
4. When checking for defective soldering (loose wires, etc.), do not press the parts or pull the lead wires excessively.
5. When measuring voltage, attach a pin to the end of "alligator" because the measuring portion is very narrow. Do not directly contact the "big mouth" with the measuring portion, otherwise damage to the electric parts or to the pattern may occur.
6. When measuring the switch operation pattern (mode changeover switch), take care not to scratch the pattern outside the switch operation range. In case of switch contact, take care not to affect the switch contact.
7. The desirable temperature of soldering iron is about 250°C. In any case, finish soldering in a few seconds. Be sure to remove chips before soldering.

20 Outfit (complete body)

■ Check the body back and finder back before mounting the top cover.



■ Strobo Circuit Checking

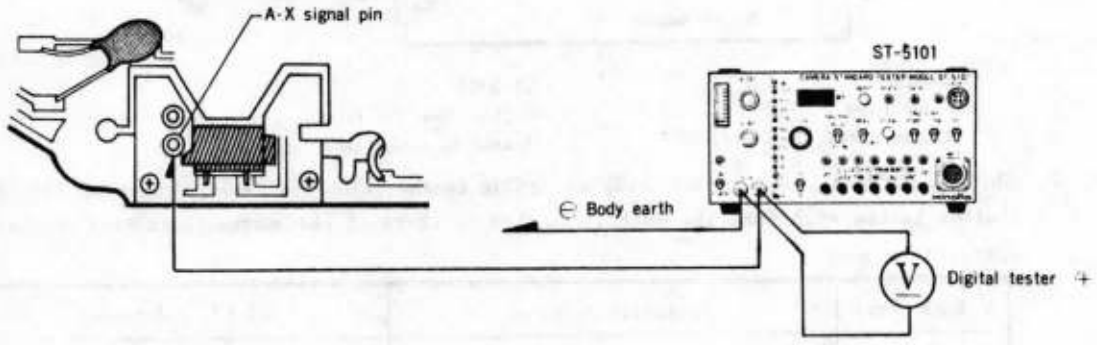
■ **Measuring instruments**

: Camera standard tester 〈Model ST-5101〉 or Constant voltage DC power supply 〈Model E-1·E-2〉

: Digital tester 〈Type 2507〉

■ **Checking procedure**

1. Connect the ⊕ side of power source to the AX signal pin and ground the ⊖ side to the body. Use a battery for power supply to the camera.



• **Camera**
Mode: M
Shutter speed: 1/1000

• **ST-5101**
V-ADJ dial: See the following table
Measuring mode: OFF

2. Change the voltage according to the following table and check the operation.

Voltage (V)	Checks
1.3 & 1.6	LED skips from correct indication to over-range LED (▲).
1.6	It is released when shutter is released. The second curtain runs when power is turned OFF.
2.0	When LED is off, correct indication is obtainable irrespective of mode with power turned ON.

■ Magnetic Release Lock Voltage Checking and Adjustment

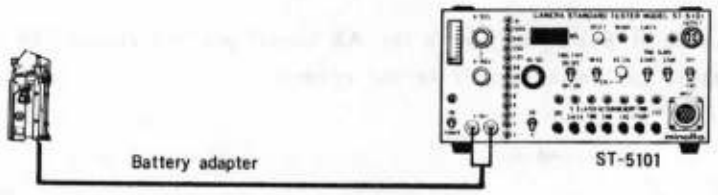
■ Measuring instruments

: Camera standard tester 〈Model ST-5101〉 or Constant voltage DC power supply 〈Model E-1·E-2〉

: Battery adapter 〈2005-4203-75〉

■ Checking procedure

1. Set the camera and measuring instrument as illustrated below.



• Camera
Mode: Free
Shutter speed: X, 1~1/1000

• ST-5101
V-SEL: See the following procedure
Measuring mode: OFF

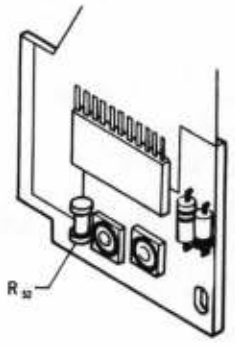
2. Shift the V-SEL knob of ST-5101 according to the following table. And push the camera shutter button each time the knob is shifted to check if the magnetic release mechanism operates or not.

V-SEL knob	Magnetic release	LED indication
2.15V	It should operate without fail.	No indication at all for voltage with magnetic release locked.
2.1 V	Whether it operates or not is not conditional.	
2.0 V		
1.9 V		
1.85V	It should be locked without fail.	

3. If the specifications are not satisfied, make the adjustment according to the following procedure.

■ Adjustment

1. If it is locked at 2.15V, replace the fixed resistor R_{52} with a higher resistance. If it operates at 1.85V, replace the resistance with a lower one to make the adjustment.



〔Type of R_{52}〕

Resistance	Part No.
680Ω	2005-8332-01
1.5KΩ	2005-8333-01
2.2KΩ	2005-8336-01
2.7KΩ	2005-8342-03
3.3KΩ	2005-8344-03
3.9KΩ	2005-8345-03
4.3KΩ	2005-8347-03

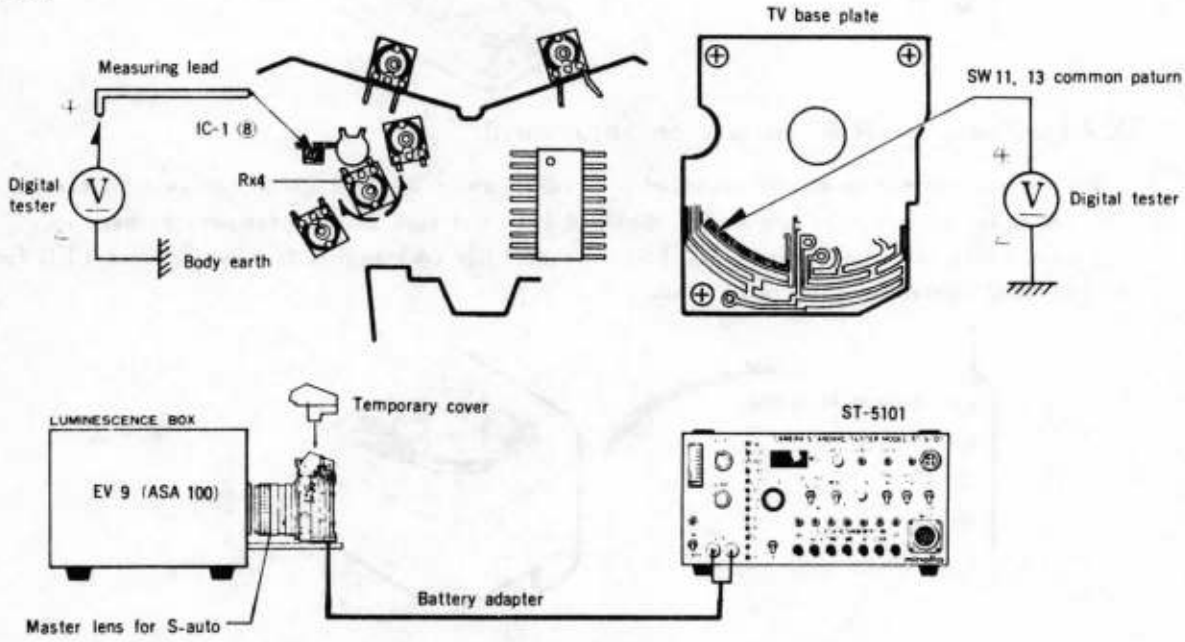
■ Under-Range LED Adjustment

■ Measuring instruments

: Camera standard tester 〈Model ST-5101〉 or Constant voltage DC power supply 〈Model E-1·E-2〉
: Luminescence box 〈Model L-222·223〉
: Master lens for S-auto 〈2005-0001-75〉
: Temporary cover 〈2005-1301-75〉
: Battery adapter 〈2005-4203-75〉
: Luminescence adjusting ariver-C

■ Preparation

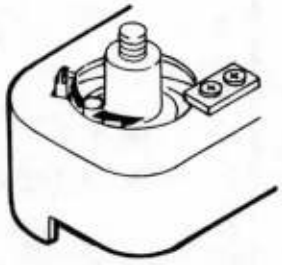
Solder the measuring lead wire, then set the camera and measuring instrument as illustrated below.

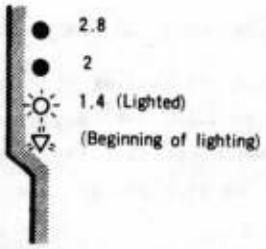


- **Camera**
  Mode: S
  Shutter speed: 1/250
  Lens diaphragm ring: F 16
- **Luminescence box**
  Luminescence: EV 9 (ASA 100)
- **ST-5101**
  V-SEL: 2.8(V)
  Measuring mode: OFF

■ Adjustment

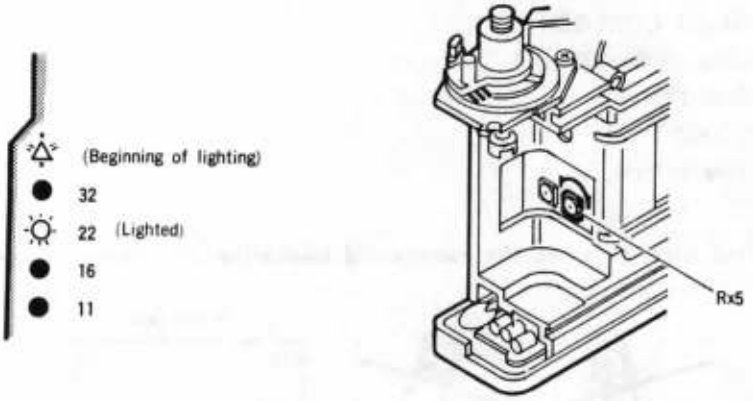
1. Set the luminescence box to EV 9 (ASA 100) and measure the voltage between SW. 11, 13 common pattern on TV circuit base plate and the earth by pushing the shutter.
2. Next, adjust RSv (by turning ASA contact base) so that the voltage between the terminal of IC-1 ⑧ and the earth is 12～13mV lower than the voltage measured in section 1.
   Example: If SW. 11, 13 common pattern voltage is 1.313V, IC-1 ⑧ terminal voltage would be 1.313V－12～13V＝1.300～1.301V.
3. Then, adjust Rx4 so that under-range LED (▼) begins lighting with LED for F 1.4 lighted.
   (Stop turning Rx4 when ▼ lights up with F 1.4 lighted.)





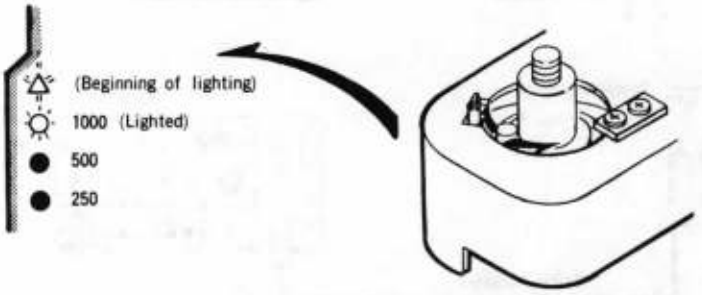
3. With IC-2 ⑩ and IC-2 ⑪ equalized in voltage, look into the finder, adjust Rx5 so that the LED of F22 is lighted and the over-range LED (▲) begins to light up. (Stop turning Rx5 when ▲ lights up with F22 lighted.)

NOTE: Even when both F22 and ▲ are lighted before adjustment, re-adjustment should be made because it is not clear that ▲ lighting is at the beginning.

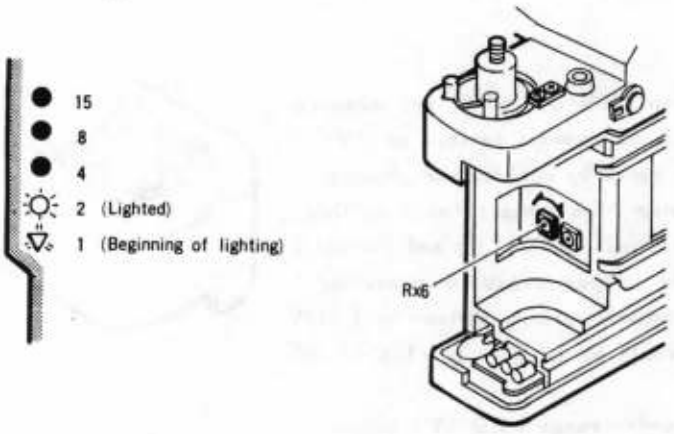


2 Adjustment of Rx6 (inclination adjustment)

1. Replace the lens with the standard lens for S-auto. Set the diaphragm to F16, camera to A-mode, luminescence box to EV 15 (ASA 100), and then put the temporary cover on.
2. Look into the finder and adjust RSv so that LED (▲) begins to light up with LED for 1/1000 lighted as illustrated below.



3. Then, set the luminescence box to EV 5 (ASA 100), and adjust Rx6 so that under-range LED (▼) begins to light up with LED for 1/2 lighted. (Stop turning Rx6 when ▼ lights up with 1/2 lighted.)



3 Checking of adjustment

Make the setting of camera, lens and luminescence box as in 1, then adjust RSv so that over-range LED (▲) begins to light up with F22 lighted.

Then check that the voltages at the terminals of IC-2 ⑩ and IC-2 ⑪ are equal to each other. If the voltages are not equal, re-adjust it according to procedure 1~2.

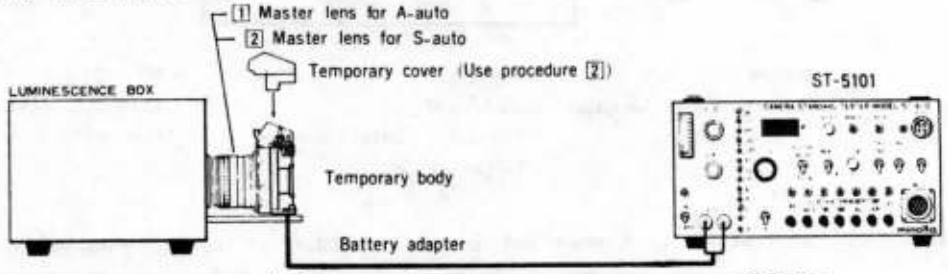
■ Adjustment of LED Indication

■ Measuring instruments

: Camera standard tester 〈Model ST-5101〉 or Constant voltage DC power supply 〈Model E-1·E-2〉
: Luminescence box 〈Model L-222·L-223〉
: Digital tester 〈Type 2507〉
: High impedance adapter 〈Model HA-1〉
: Master lens for A-auto 〈2005-0002-75〉
: Master lens for S-auto 〈2005-0001-75〉
: Temporary cover 〈2005-1301-75〉
: Temporary body 〈2005-1001-75〉
: Battery adapter 〈2005-4203-75〉
: Luminescence adjusting ariver-C

■ Preparation

Remove the front base plate block from the body and install it on the temporary body. At that time, secure the circuit board B and battery case with setscrews. Then set the camera and measuring instrument as illustrated below.

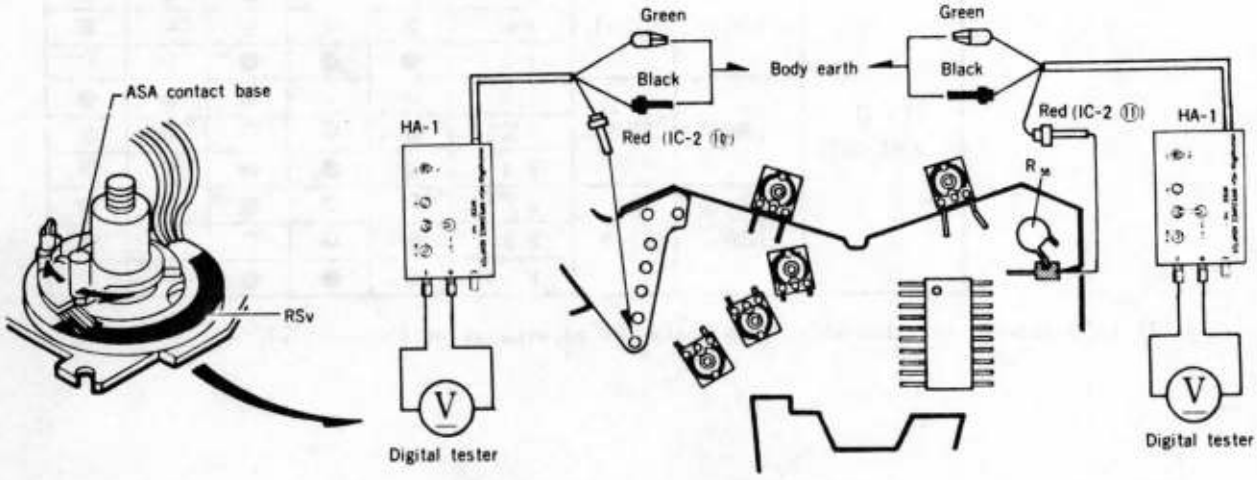


- Camera
  Mode : [1] S
  : [2] A
  Shutter speed: 1/1000
  Lens: [1] MD ring F 22
  [2] Diaphragm ring F 16
- Luminescence box
  Luminescence: [1] EV 15 (ASA 100)
  [2] EV 15, EV 5 (ASA 100)
- ST-5101
  V-SEL: 2.8 (V)
  Measuring mode: OFF

■ Adjusting procedure ([1]~[3])

[1] Adjustment of Rx5 (level adjustment)

1. Mount the standard lens for A-auto. Set the MD ring to F22, camera to S-mode, luminescence box to EV 15 (ASA 100), and then make the zero-adjustment of high impedance adapter.
2. Push the camera shutter button and measure the voltage between the terminal IC-2 ⑪ and the earth. Then adjust RSv (by turning the ASA contact base) so that the voltage between the terminal of IC-2 ⑪ and the earth becomes equal to the previously measured voltage for IC-2 ⑪.



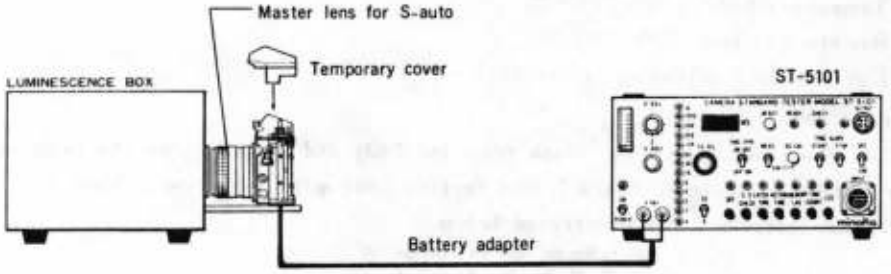
■ LED Indication Checking

■ Measuring instruments

: Camera standard tester 〈Model ST-5101〉 or Constant voltage DC power supply 〈Model E-1·E-2〉
: Luminescence box 〈Model L-222·L-223〉
: Master lens for S-auto 〈2005-0001-75〉
: Temporary cover 〈2005-1301-75〉
: Battery adapter 〈2005-4203-75〉

■ Checking procedure

1. Set the camera and measuring instrument as illustrated.



- Luminescence box
  Luminescence: EV 11 (ASA 100)
- Camera
  ASA: 100
  For other matters see the following table.
- ST-5101
  V-SEL: 2.8 (V)
  Measuring mode: OFF

2. Check the LED indications in A-mode and S-mode according to the following table.

〔A-Mode〕
Shutter speed
: 1~1/1000

Luminescence	Diaphragm	Nomal LED	Indication	Allowable range (± 1 EV)				
				+1 EV	+0.5EV	0	−0.5EV	−1 EV
EV 11 (ASA 100)	F 2.8	250	500	☼	☼	●	●	●
			250	●	☼	☼	☼	●
			125	●	●	●	☼	☼
	F 8	30	60	☼	☼	●	●	●
			30	●	☼	☼	☼	●
			15	●	●	●	☼	☼
	F 16	8	15	☼	☼	●	●	●
			8	●	☼	☼	☼	●
			4	●	●	●	☼	☼

〔S-Mode〕
Diaphragm
: F 16

Luminescence	Diaphragm	Nomal LED	Indication	Allowable range (± 1 EV)				
				+1 EV	+0.5EV	0	−0.5EV	−1 EV
EV 11 (ASA 100)	1/15	(F) 11	F 16	☼	☼	●	●	●
			F 11	●	☼	☼	☼	●
			F 8	●	●	●	☼	☼
	1/60	(F) 5.6	F 8	☼	☼	●	●	●
			F 5.6	●	☼	☼	☼	●
			F 4	●	●	●	☼	☼
	1/500	(F) 2	F 2.8	☼	☼	●	●	●
			F 2	●	☼	☼	☼	●
			F 1.4	●	●	●	☼	☼

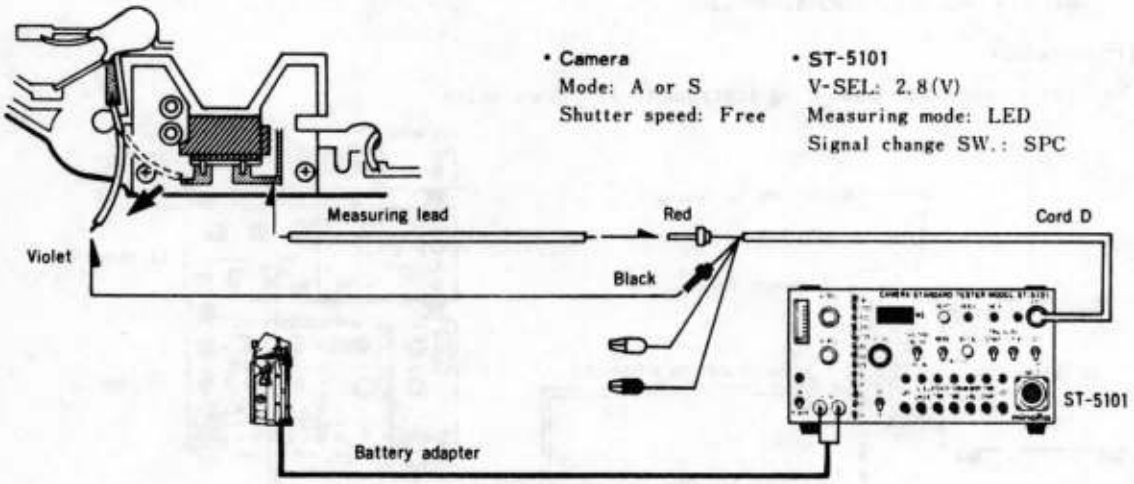
3. If LED exceeds the allowable range, make the adjustment on Page. 53~54.

■ LED Checking and Adjustment

■ **Measuring instruments**: Camera standard tester 〈Model ST-5101〉
: Temporary cover 〈2005-1301-75〉
: Battery adapter 〈2005-4203-75〉

■ **Checking procedure**

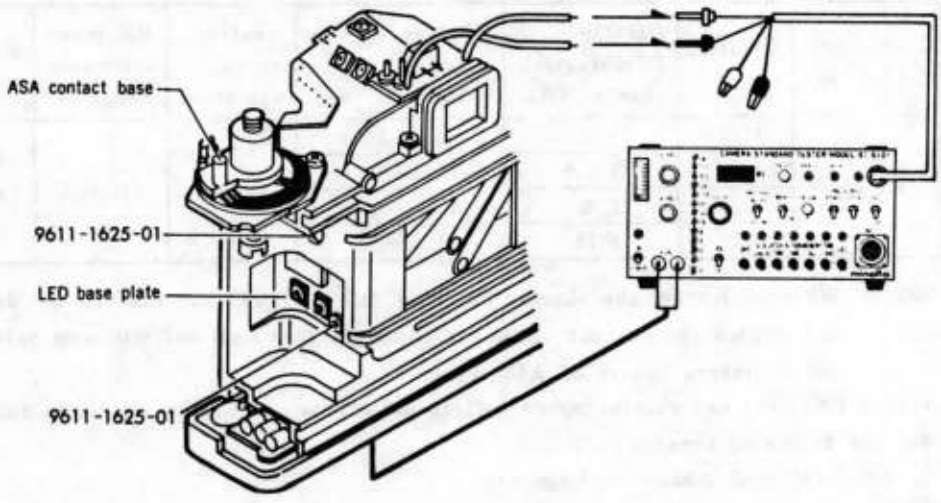
1. Disconnect the lead wire (violet), then solder the measuring lead wire and set the camera and measuring instrument.



2. After completing the above preparation, look into the finder and push the shutter button. Change RSv (by turning ASA contact base) so that LED is continuously lighted from top (▲) to bottom (▼). At that time, LED should be clearly visible from top to bottom.
3. If LED is not clear, make the adjustment according to the following procedure.

■ **Adjustment**

1. Remove the front base plate block from the body and install it on the temporary body. Also mount the circuit base plate B and battery case.
(For the connections and setting, refer to the above illustration.)
2. Loosen the LED base plate set-screws (9612-1625-01) and vertically shift the LED base plate so that LED is evenly viewed from top (▲) to bottom (▼).
Note that the appearance of LED may vary depending on the position of the eye looking into the finder.



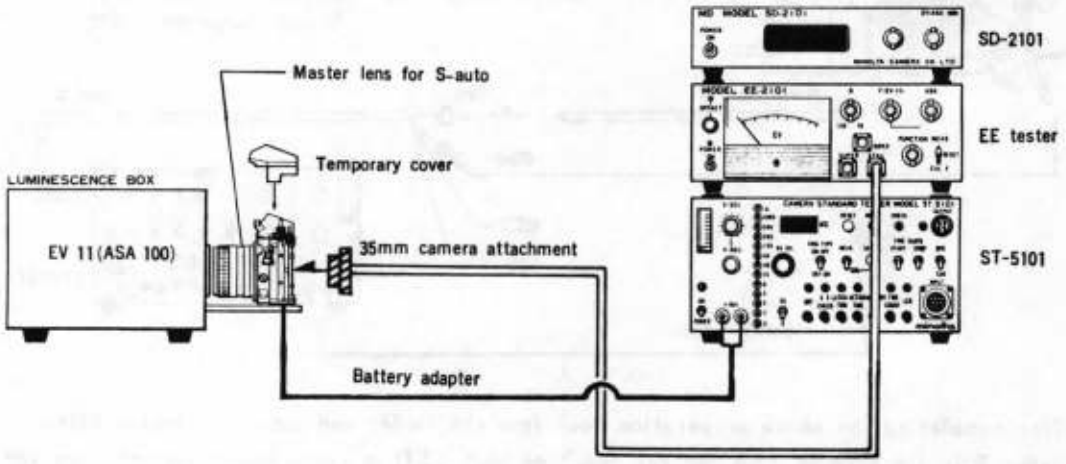
■ S-Mode Checking (EE Level and Shutter Speed)

■ Measuring instruments

: Camera standard tester 〈Model ST-5101〉 or Constant voltage DC power supply 〈Model E-1·E-2〉
: Luminescece box 〈Model L-222·223〉
: EE tester 〈Model EE-2101·2111〉
: Shutter tester 〈Model SD-2101〉
: Master lens for S-auto 〈2005-0001-75〉
: Temporary cover 〈2005-1301-75〉
: Battery adapter 〈2005-4203-75〉

■ Preparation

Set the camera and measuring instrument as shown below.



- Camera
  Mode: S
  Shutter speed:
  See the following table
  ASA: 100
  Lens diaphragm ring: F 16
  Eye-piece shutter: close

- ST-5101
  V-SEL: 2.8(V)
  Measuring mode
  : OFF

- EE tester
  K value dial: 1.2
  ASA dial: 100
  For other matters see the operation manual

- Luminescence box
  Luminescence: EV 11(ASA 100)
- SD-2101
  Luminescence change SW.
  : EV 11
  Diaphragm change SW.
  : See the following table

■ Checking procedure

1. Change the shutter speed in accordance with the following table. Release the shutter several times every time the shutter speed is changed and check the EE level and its variation by EE tester and the shutter speed setting deflection and its variation by counter indication of SD-2101 to see that they are within the allowable ranges.

Luminance (ASA 100)	Shutter speed	SD-2101 Diaphragm change SW.	Shutter speed deflection (ms)	Shutter speed variation	EE level allowable range	EE level variation
EV 11	1/125	F 4	3.91~15.6	±1EV	±0.8EV	less than 0.6EV
	1/60	F 5.6	7.81~31.3			
	1/30	F 8	15.6~62.5			
	1/15	F 11	31.3~125			

NOTE: When evaluating the shutter speed of SD-2101, release the shutter several times and employ the average value excluding the maximum and minimum values because the luminance box is of AC power.

- If the EE level and shutter speed setting deflection exceed the allowable ranges, carry out the following checks.

① EE level in A-mode·····Page. 49.
② Memory time lag·····Page. 41.
③ Latch time and action time·····Page 40.

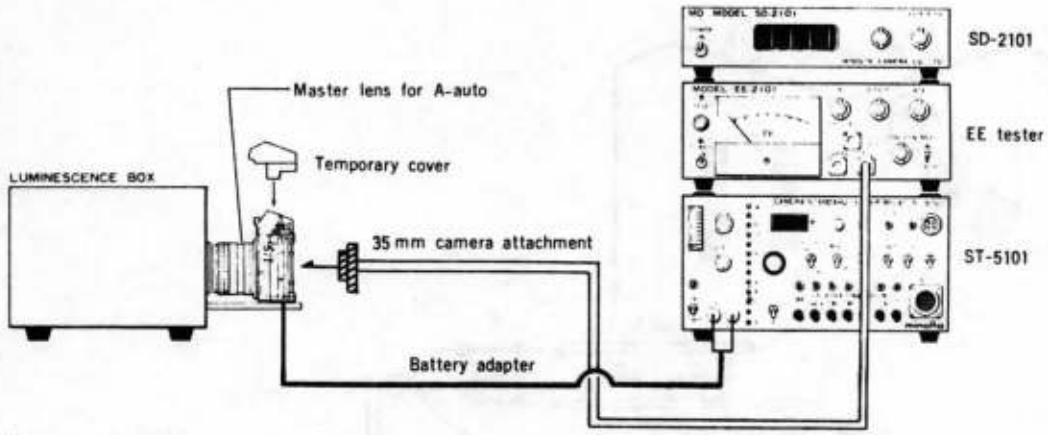
■ A-mode Checking (EE Level)

■ Measuring instruments

: Camera standard tester 〈Model ST-5101〉 or Constant voltage DC power supply 〈Model E-1·E-2〉
: Luminescence box 〈Model L-222·223〉
: EE tester 〈Model EE-2101·2111〉
: Shutter tester 〈Model SD-2101〉
: Master lens for A-auto 〈2005-0002-75〉
: Temporary cover 〈2005-1301-75〉
: Battery adapter 〈2005-4203-75〉

■ Preparation

Set the camera and measuring instrument as shown below.



• **Camera**
Mode: A
Shutter speed: 1~1/1000
ASA: 100
Lens MD ring: Free
Eye-piece shutter: Close

• **ST-5101**
V-SEL: 2.8(V)
Measuring mode: OFF

• **EE tester**
K value dial: 1.2
ASA dial: 100
For other matters see the operation manual.

• Luminescence box
Luminescence
: See the following table

• **SD-2101**
Luminescence change SW.
: See the following table
Diaphragm change SW.: F 5.6

■ Checking procedure

1. Change the luminance in accordance with the following table. Release the shutter several times every time the shutter speed is changed and make sure that the shutter speed and EE level are within the allowable range.

Luminance (ASA 100)	SD-2101 Diaphragm change SW.	Shutter speed allowable range (ms)	EE level allowable range	EE level variation
EV 15	F 5.6	0.691~1.38	±0.8EV	less than 0.6EV
EV 11		11.0~22.1		
EV 9		88.4~177		

NOTE: When evaluating the shutter speed of SD-2101, release the shutter several times and employ the average value excluding the maximum and minimum values because the luminance box is of AC power.

• If the shutter speed and EE level exceed the allowable ranges, carry out the following checks.

① Manual shutter speed system·····Pages. 44~46.
② ASA inclination adjustment·····Page. 47.
③ Auto shutter speed·····Page. 48.

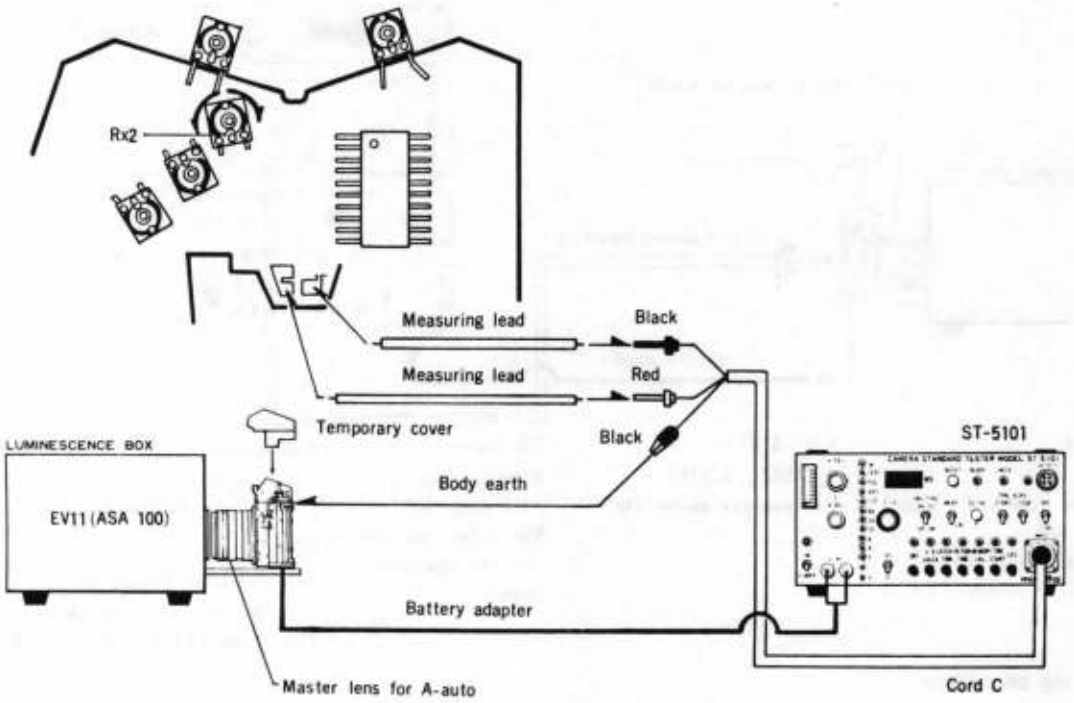
■ Auto Shutter Speed Adjustment

■ Measuring instruments

: Camera standard tester 〈Model ST-5101〉
: Luminescence box 〈Model L-222·223〉
: EE tester 〈Model EE-2101·2111〉
: Master lens for A-auto 〈2005-0002-75〉
: Temporary cover 〈2005-1301-75〉
: Luminescece adjusting driver-C
: Battery adapter 〈2005-4203-75〉

■ Preparation

Solder the measuring leads (2 wires) as shown below, then set the camera and measuring instrument.



• Camera
Mode: A
Shutter speed: 1~1/1000
ASA: 100 (Set by temporary cover)
Lens MD ring: Free
Eye-piece shutter: Close

• ST-5101
V-SEL: 2.8(V)
Measuring mode: TIME COUNT
TRIG SLOPE: START·····⊕
STOP·····⊕

• Luminescence box
Luminescence: EV 11
(ASA 100)

■ Adjustment

1. After completing the above preparation, release the shutter and make the adjustment by turning Rx2 so that the counter indication approaches to the standard value **15.6 ms**. Turning Rx2 clockwise decreases the counter indication and turning it counterclockwise increases the value.

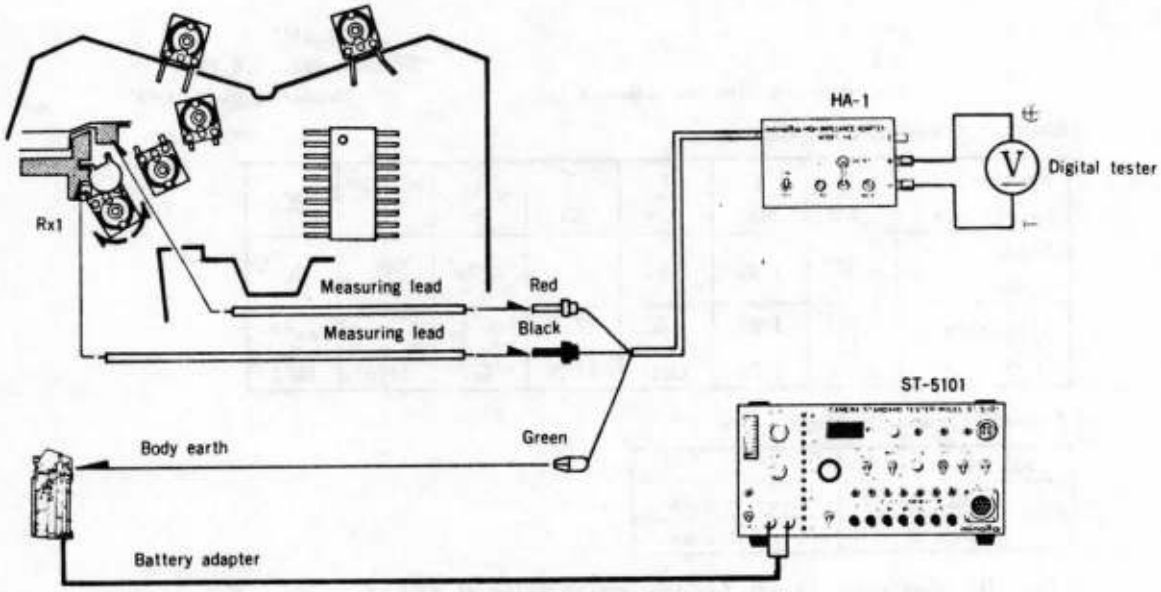
■ ASA Inclination Adjustment

■ Measuring instruments

: Camera standard tester 〈Model ST-5101〉 or Constant voltage DC power supply 〈Model E-1·E-2〉
: Digital tester 〈Type 2507〉
: High impedance adapter 〈Model HA-1〉
: Battery adapter 〈2005-4203-75〉
: Luminescence adjusting driver-C

■ Preparation

Solder the measuring leads (2 wires) as shown below, then set the camera and measuring instrument.



• Camera
Mode: Free
Shutter speed: 1~1/1000

• ST-5101
V-SEL: 2.8(V)
Measuring mode: OFF

■ Adjustment

1. After completing the above preparation, make the zero adjustment of the high impedance adapter.
2. Push the camera shutter button and make the adjustment by turning Rx1 so that the voltage indication of digital tester is **144±2 mV** (room temperature at 25°C). Turning Rx1 clockwise causes the voltage to decrease and turning it counterclockwise increases the voltage. Since the adjusting voltage value varies depending upon the ambient temperature, the following correction table is to be used.

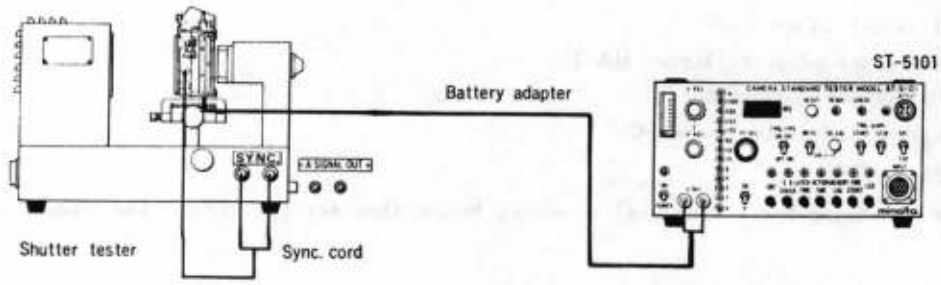
〔Temperature correction〕

Ambient temp. (°C)	15±2.5	20±2.5	25±2.5	30±2.5
Corrected voltage (mV)	139± 2	142± 2	144± 2	146± 2

2 Shutter speed and X time lag checking

■ Checking procedure

1. Set the camera and measuring instrument, release the shutter several times at each check point, then make sure that each value is within the following specification.



• Camera
Mode: M
Shutter speed: See the following table

• ST-5101
V-SEL: 2.8 (V)
Measuring mode: OFF

〔Shutter speed specifications〕

Shutter speed (sec.)	1/1000	1/500	1/125	1/30	1/8	1	X
Standard value (ms)	0.977	1.95	7.81	31.3	125	1000	10
Allowable value (ms)	0.691 ~ 1.38	1.38 ~ 2.76	5.53 ~ 11.0	22.1 ~ 44.3	88.4 ~ 177	707 ~ 1410	7.84 ~ 14.1

〔X time lag specification〕

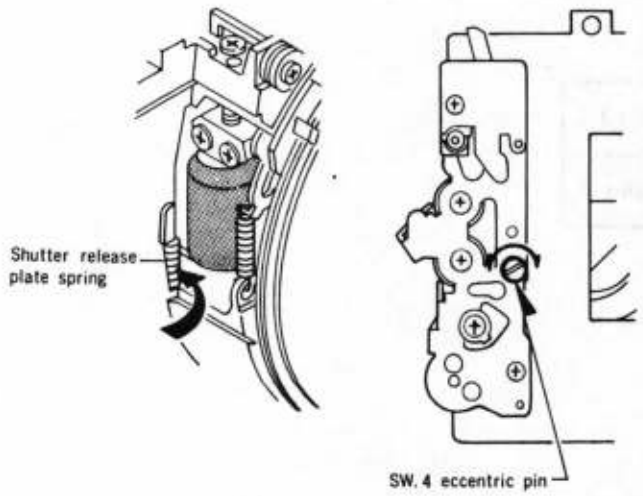
Shutter speed	X
Range A	over 0.3 ms
Range B	over 2.5 ms

• The allowable value stands for the center value of shutter tester. For uneveness, refer to the inspection standard.

2. If the shutter speed is out of the specification, make the adjustment in 3.

3 Adjustment of SW.4 (Shutter speed correction)

NOTE: When the shutter block has not been disassembled and the checks and adjustment on Pages. 44 and 45 have been satisfactorily performed, this adjustment is almost unnecessary because the specifications in 1 are satisfied.
If the adjustment of SW.4 is not enough to satisfy the specification, adjust the shutter block according to the "Shutter disassembly, assembly and adjustment".



■ Adjusting procedure

1. Insert a thin screwdriver from the air damper of the front base plate and turn the eccentric pin of SW.4 to make the adjustment as illustrated.

■ Precautions

When turning the eccentric pin, handle the screw driver carefully because it is liable to touch the spring of the shutter release plate.

■ Manual Shutter Speed Adjustment

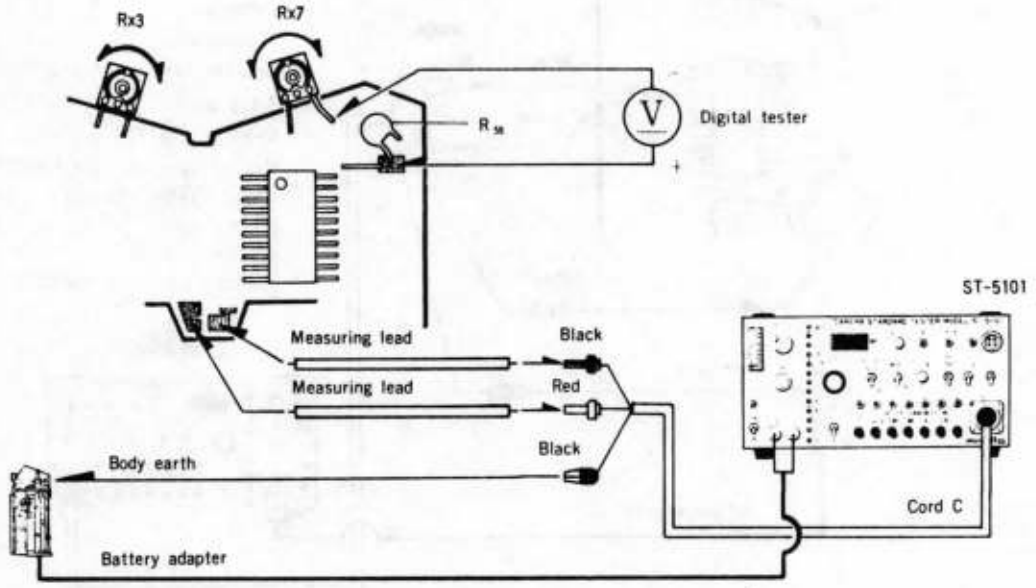
■ Measuring instrument

: Camera standard tester 〈Model ST-5101〉
: Shutter tester 〈Model FS1D-MN4·S-2101〉
: Degital tester 〈Type 2507〉
: Battery adapter 〈2005-4203-75〉
: Luminescence adjusting driver C

[1] Rx3 (level) and Rx7 (inclination) adjustment

■ Preparation

Solder the measuring leads (2 wires) as shown below, then set the camera and measuring instrument.



• Camera
Mode: M
Shutter speed: 1~1/1000

• ST-5101
V-SEL: 2.8 (V)
Measuring mode: TIME COUNT
TRIG SLOP: START……⊕
STOP……⊕

■ Adjustment

1. Release the shutter and make the adjustment by turning Rx3 so that the counter indication becomes within the range of 0.96~1.04 ms.
2. Measure the voltage at Rx7 and R_{56}, pushing the shutter button. And make the adjustment by turning Rx7 so that the voltage indicated by the digital tester becomes 180±2 mV (room temperature at 25°C). Turning Rx7 clockwise causes the voltage to decrease and turning it counterclockwise causes the voltage to increase.
   Since the adjusting voltage value varies depending upon the ambient temperature, the following correction table is to be used.
   [Temperature correction]

Ambient temp. (°C)	15±2.5	20±2.5	25±2.5	30±2.5
Corrected voltage (mV)	174± 2	177± 2	180± 2	183± 2.

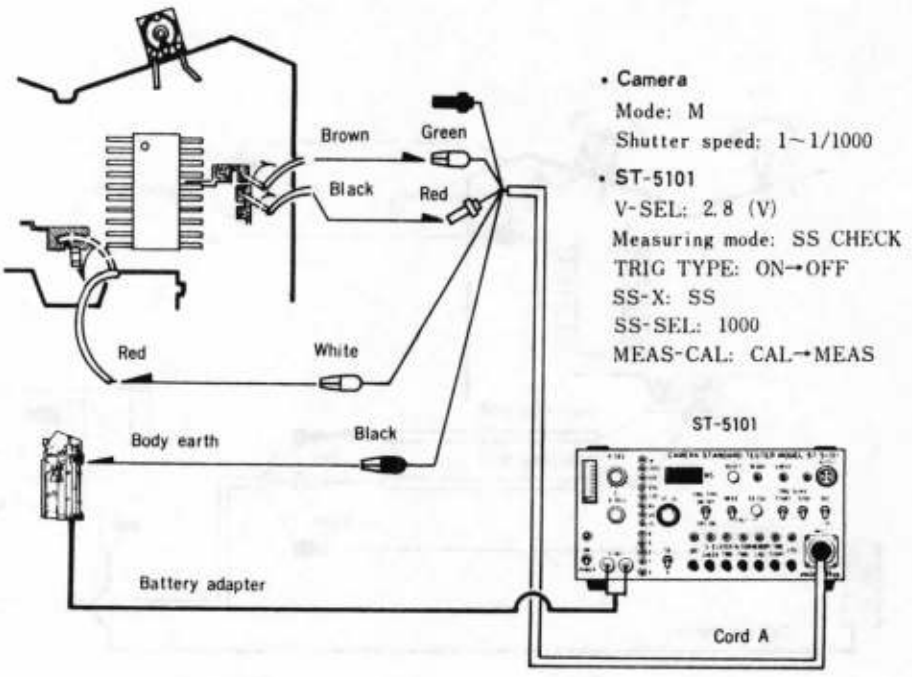
3. Release the shutter and check if the counter indication in the above step 1 is wrong. If the indication is deflected, make the adjustment in 1 once again and then check the voltage indication in 2……repeating the adjustment.

■ Shutter Block Performance Checking

■ Measuring instruments : Camera standard tester (Model ST-5101)
: Battery adapter (2005-4203-75)

■ Preparation

Solder the 3 lead wires (red, brown, black) of the shutter block as shown below, then set the camera and measuring instrument.



■ Checking procedure

1. Make sure that the counter indicates 0.98 ms by the SS-CAL switch of the camera standard tester.
2. Release the shutter several times and check if the counter indication shows extreme variation.
   • If the counter varies extremely in indication, check the shutter block in accordance with the section "Shutter assembly and adjustment".

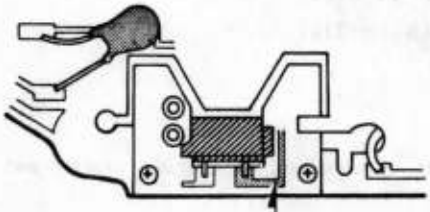
■ FET Gate Voltage Checking and Adjustment

■ Measuring instruments

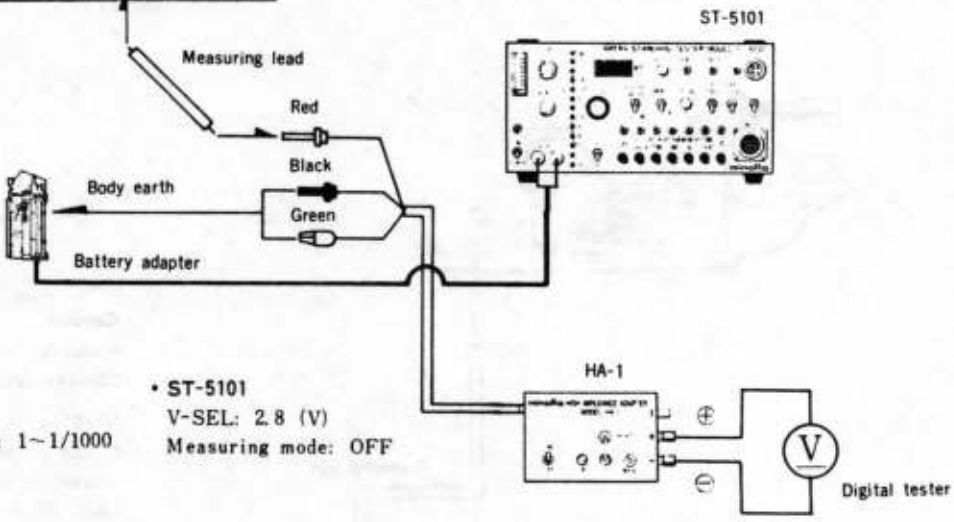
: Camera standard tester 〈Model ST-5101〉 or Constant voltage DC power supply 〈Model E-1·E-2〉
: High impedance adapter 〈Model HA-1〉
: Digital tester 〈Type 2507〉
: Battery adapter 〈2005-4203-75〉

■ Checking procedure

1. Solder the measuring lead (1 wire) and then set the camera and measuring instrument.



• When measuring the voltage, be sure to solder the measuring lead wire because clipping it to the leg of FET may cause the position of SPC to become deflected. Also, soldering point should be away from the SPC leg.



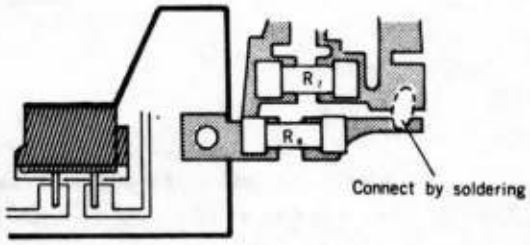
• Camera
Mode: Free
Shutter speed: 1~1/1000

• ST-5101
V-SEL: 2.8 (V)
Measuring mode: OFF

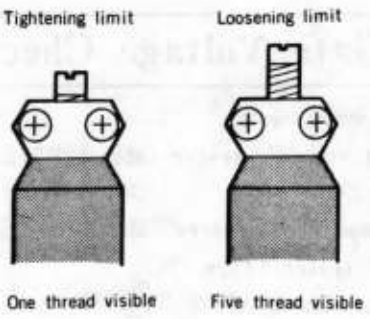
2. After completing the above preparation, make the zero adjustment of the high impedance adapter. Then push the shutter button and observe the indication of the digital tester.
3. Make sure that the digital tester indicates 450~800mV. If the voltage is less than 450 mV, make the adjustment according to the following procedure.

■ Adjustment

1. Shortcircuit the printed patterns of R_6 and R_7 by soldering as shown by dotted line in the illustration so that the FET gate voltage becomes within the specified range.



2. If the indication is still out of the specified range even when the damper adjustment has exceeded the limit as shown at right, replace the damper and make the re-adjustment.

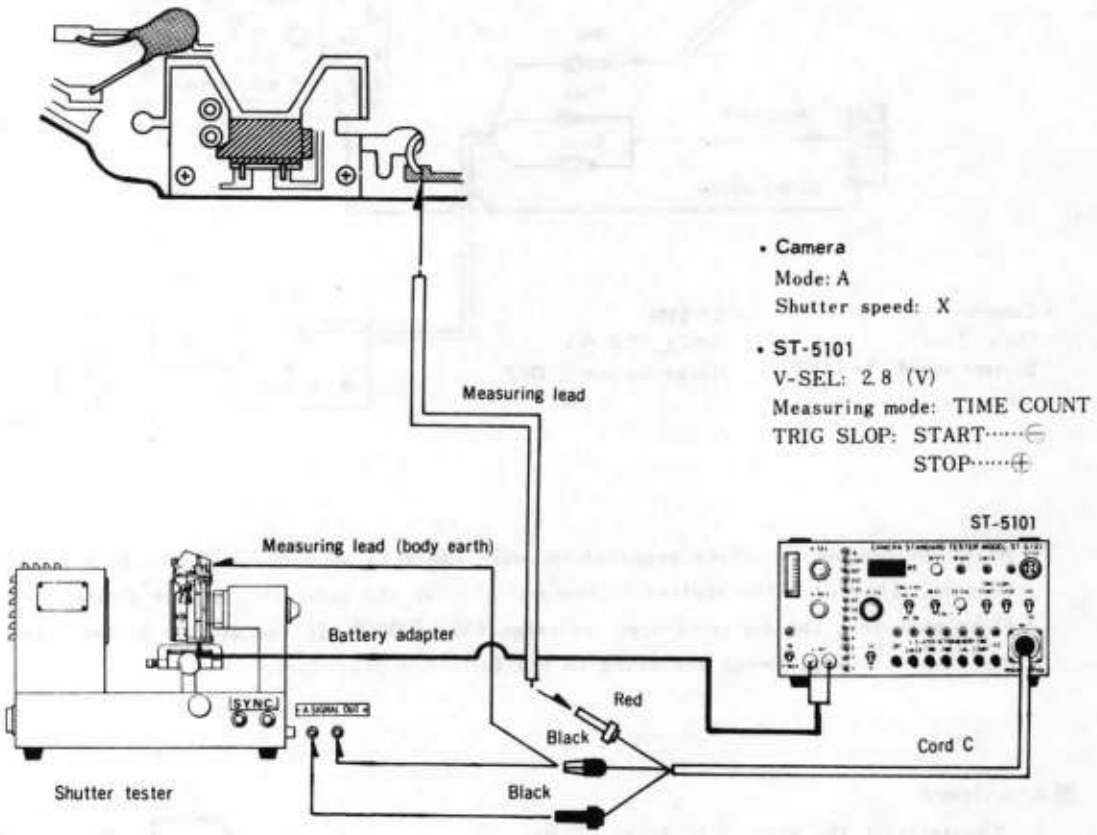


■ Release Time Lag Checking (Time from SW.3 ON Until first curtain appears.)

■ Measuring instruments: Camera standard tester (Model ST-5101)
: Shutter tester (Model FS1D-MN4·S-2101)
: Battery adapter (2005-4203-75)

■ Checking procedure

1. Solder the measuring lead (1 wire) and then set the camera and measuring instrument.



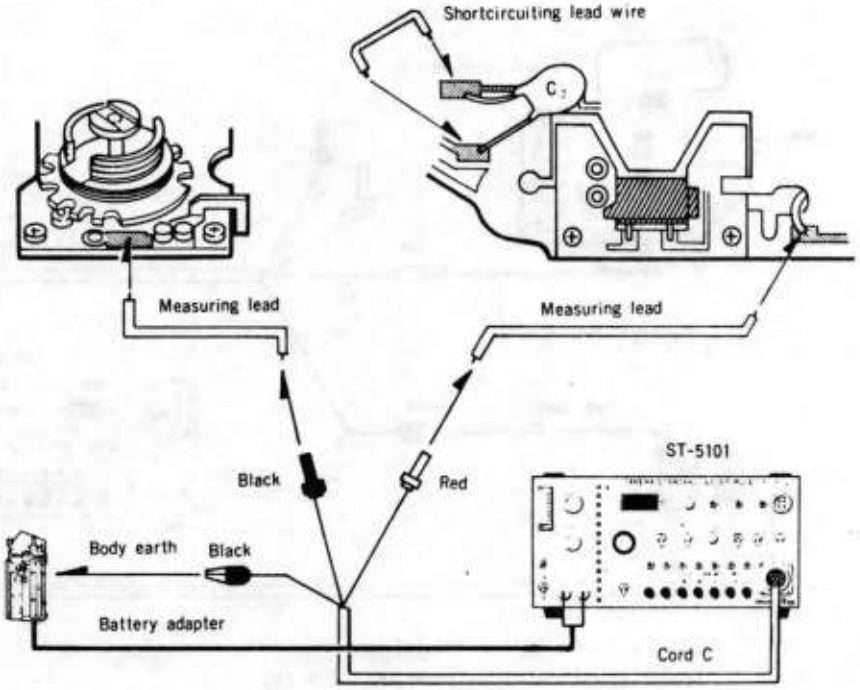
2. After completing the above preparation, release the shutter several times and check that the counter's indication is with in 100 ms.
• If the indication exceeds the specified value, make the adjustment, as instructed on Page 41, by turning the damper adjuster. And check the EE level according to the procedure on Page. 50.

■ Memory Time Lag Checking and Adjustment (Time from SW.3 ON until SW.6 OFF)

■ Measuring instruments: Camera standard tester (Model ST-5101)
: Battery adapter (2005-4203-75)

■ Checking procedure

1. Solder the measuring leads (2 wires) and then set the camera and measuring instrument. Also, shortcircuit the capacitor (C_2) with the lead wire.



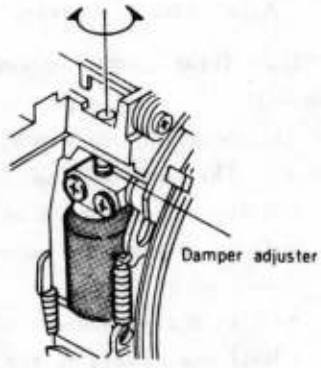
• Camera
Mode: A
Shutter speed: X

• ST-5101
V-SEL: 2.8 (V)
Measuring mode: MEMORY LAG

2. After completing the above preparation, release the shutter several times and check that the counter indicates 56 ± 2 ms. If the indication is wrong, adjust it according to the following procedure.

■ Adjustment

1. If the counter's indication exceeds the specified value, make the adjustment by turning the damper adjuster.
   • Turn the damper adjuster about 1/8 turn each time and release the shutter several dozen times every time the adjuster is turned. Check the indication after stabilization of the damper.
   • After adjustment, apply SCREW LOCK G to the screw of damper adjuster.

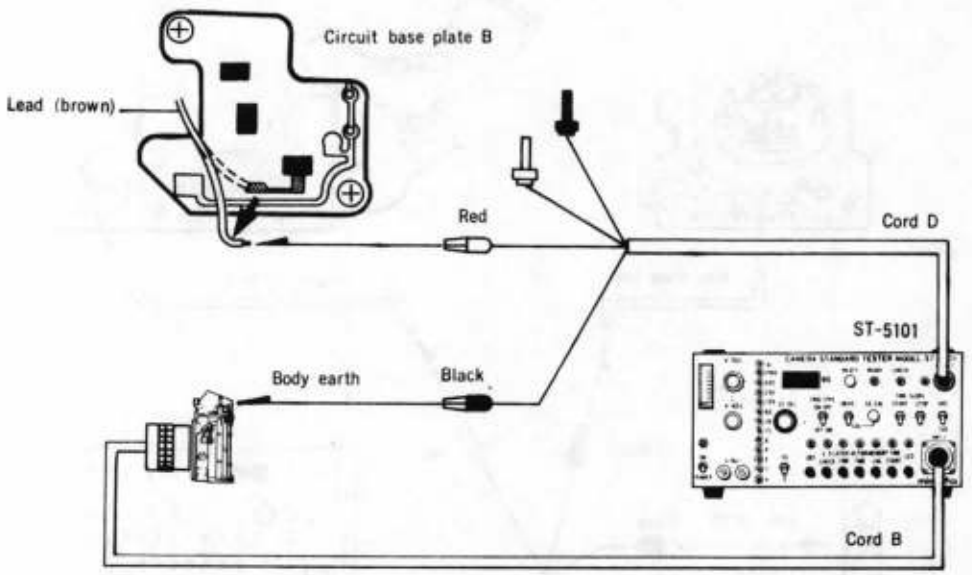


■ Latch Time and Action Time Checking

■ Measuring instrument : Camera standard tester (Model ST-5101)

■ Preparation

Attach the measuring head of cord-B to the camera body as illustrated. Disconnect the soldered lead wire (brown) from the diaphragm stop base plate of the circuit base plate B at the bottom of the body. Then set the camera measuring instrument.



• Camera
Mode: Free
Shutter speed: B

• ST-5101
V-SEL: 2.8 (V)
Measuring mode: LATCH TIME (Latch time measurment)
ACTION TIME (Action time measurment)

■ Checking procedure

[1] Latch time (time from diaphragm stop magnet "ON" until preset lever "STOP"

1. Set the shutter speed "B" and put the camera on the desk in the correct posture. Release it about 20 times and then 10 times to make the measurements. The average value should be within 1.6ms.
   • Observe the counter indication when the shutter button is being depressed.
   • An extremely small value (less than 1 ms) is a faulty indication. It should be omitted.
   • Hold the camera in the correct position to obtain correct results.
   • If the average value exceeds 1.6 ms, check the diaphragm stop base plate and the magnetic piece lever adjustment in accordance with the instructions on Pages. 23～24. Also, check the preset lever operation.

[2] Action time (time required for preset lever to advance from 6 mm to 2.5 mm from body center)

Set the measuring mode SW. of ST-5101 to ACTION TIME, and then carry out the checks as follows. The cord-D is not needed (but allowable if connected).

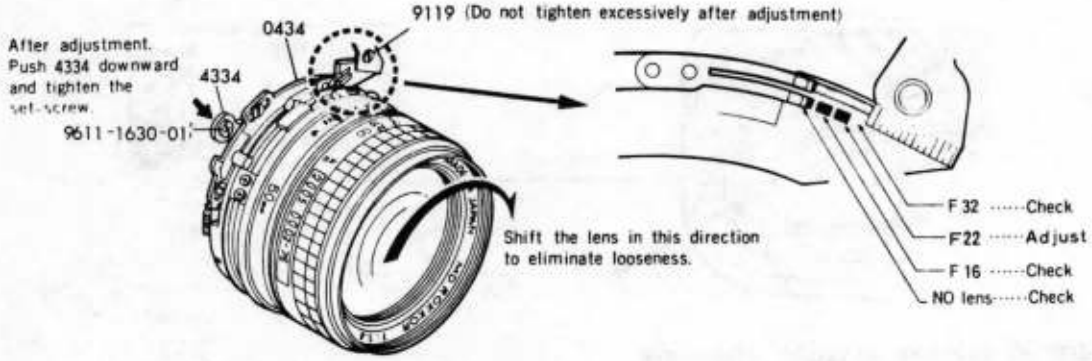
1. Set the shutter speed to "B" and put the camera on the desk in the correct posture. Release it about 20 times and then 10 times to make the measurements. The average value should be 20±2 ms.
   • Observe the counter indication when the shutter button is being depressed.
   • Hold the camera in the correct position to obtain correct results.
   • If the average value exceeds 20±2 ms, check the preset lever operation.

■ Adjustment of MD Lever Position

■ Measuring instrument : Master lens for A-auto 〈2005-0002-75〉

■ Adjusting procedure

1. Mount the master lens on the body and set the MD ring to F 22 (adjust lens by shifting in the arrow direction).
2. Loosen two AV board set-screws (9611-1630-01, 9119) and adjust the contact side of diaphragm resistor retaining plate (4334) so that the contact of 0434 (MD lever) comes to the center of the F 22 pattern of AV board.



3. When the MD ring of lens is shifted to F 16, F 32, make sure the contact is correctly at the pattern of the set-value of F.

■ MD Common Voltage Checking

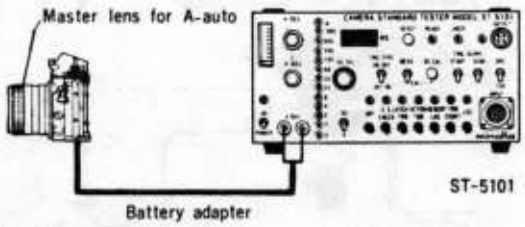
■ Measuring instruments

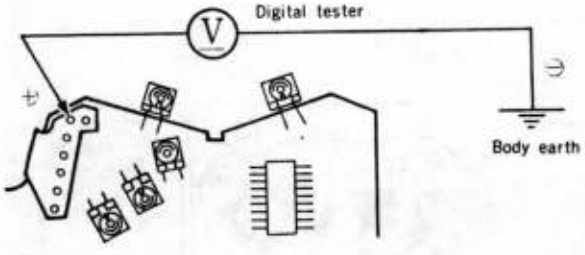
: Digital tester 〈Type 2507〉
: Camera standard tester 〈Model ST-5101〉 or Constant voltage DC power supply 〈Model E-1·E-2〉
: Master lens for A-auto 〈2005-0002-75〉
: Battery adapter 〈2005-4203-75〉

■ Checking procedure

1. Mount the master lens on the body.
2. Check the voltage by pushing the shutter button, with the MD ring set at F 16, F 22, F 32 and the lens removed, by means of a digital tester.

MD ring	Voltage
F 16	200~300 (mV)
F 22	2.9~3 (V)
F 32	2.1~2.3 (V)
No lens	1.1~2.2 (V)





• Camera
Mode: A
Shutter speed: Free

• ST-5101
V-SEL: 3.0 (V)
Measuring mode: OFF

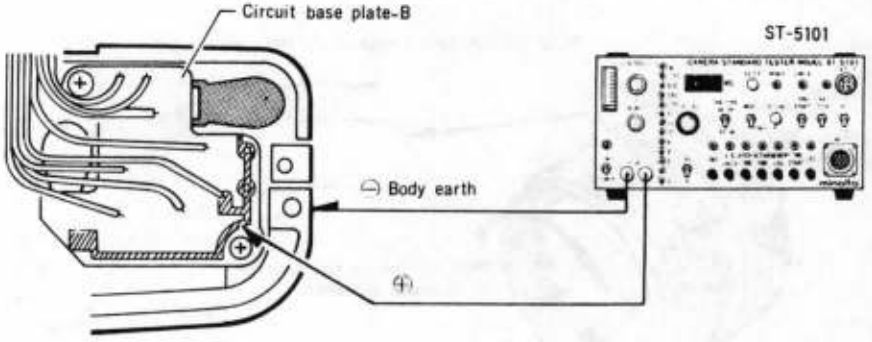
■ Magnet Release Checking

■ Measuring instrument

: Camera standard tester 〈Model ST-5101〉 or Constant voltage DC power supply 〈E-1 or E-2〉

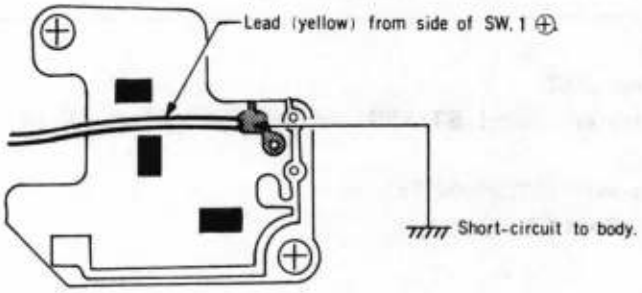
■ Preparation

Connect the power source ⊕ side to the ⊕ side pattern of circuit base plate B at the bottom of the body. Ground the ⊖ side of power source to the body. Set the power source voltage to 1.9V. Then carry cut the checks according to the following procedure.



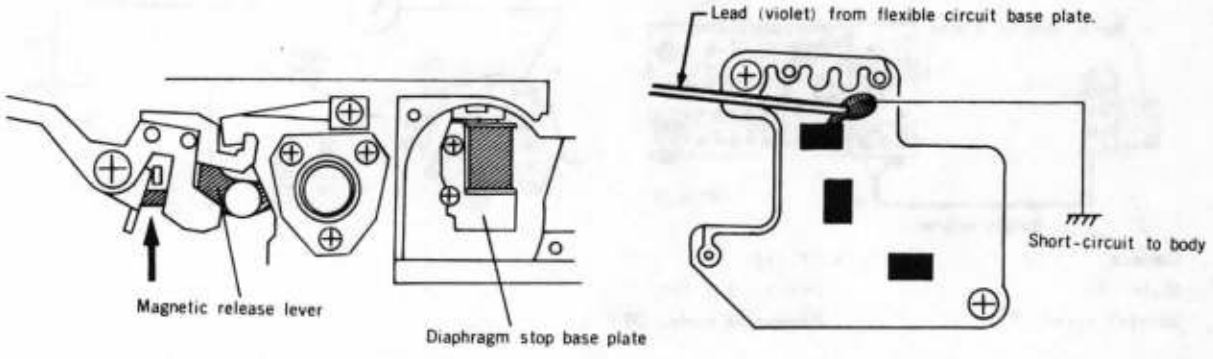
1 Magnetic release magnet checking

1. Set the shutter dial to other positions than "B" and "○".
2. Next, short-circuit between the pattern of circuit base plate B and the body by means of a pincette. Make sure that the magnet is released.

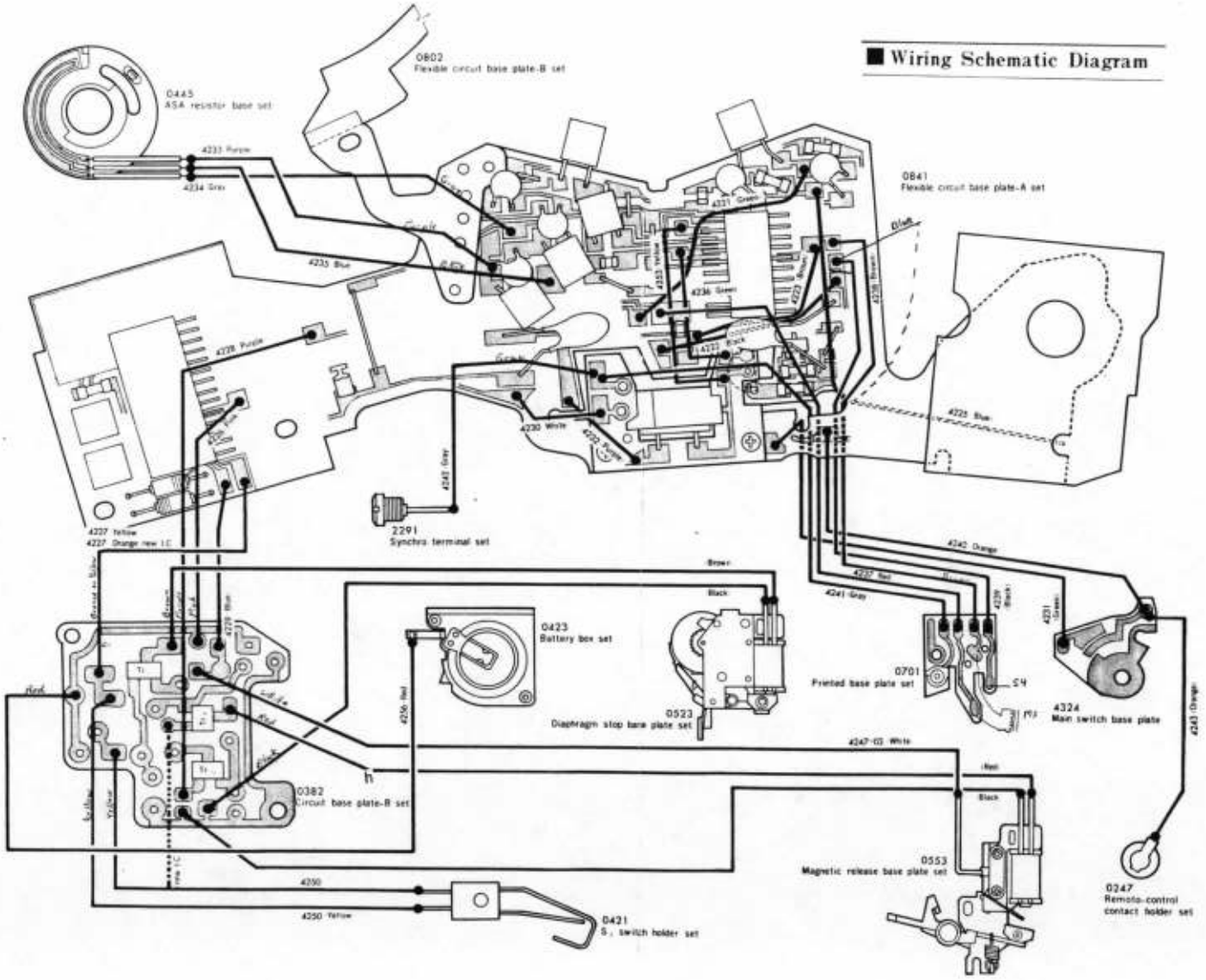


2 Separation of magnet for diaphragm stop

1. Take out the battery case.
2. Set the shutter dial to "B" and release the shutter. With the shutter released, push the magnetic release lever of magnetic release base plate in the arrow direction to separate the magnet for magnetic release.
3. Then short-circuit between the pattern of circuit base plate B and the body by means of a pincette. Make sure that the magnet of diaphragm stop base plate is separated.



■ Wiring Schematic Diagram

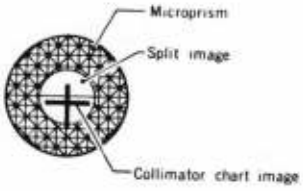


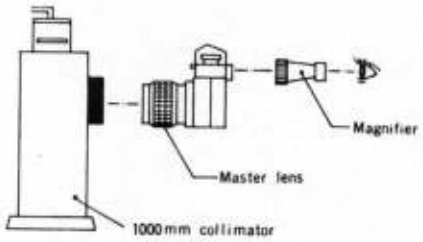
■ Finder Back Adjustment

■ Measuring Instruments : 1000mm collimator (Model RC-1000 Ⅰ, Ⅱ, Ⅲ)
: Master lens for 054 finder back adjustment (054-5202-79)
: Magnifier (8213-007)

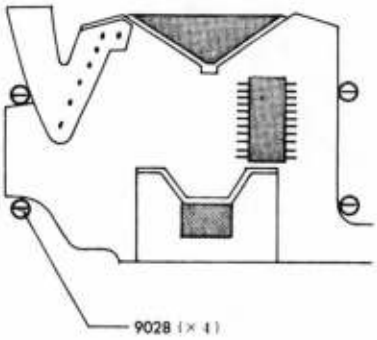
■ Adjusting procedure

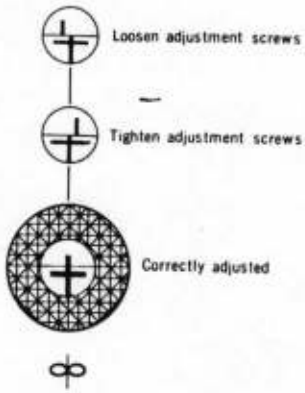
1. Set the body in such a position that the chart image is as illustrated below. Then set the view of magnifier to the chart image.



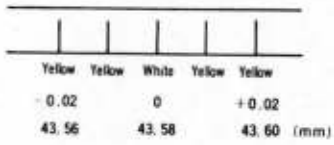


2. With the white lines on the standard lens matched with each other, adjust the vertical line of the chart image by evenly requlating the four adjustment screws (9028) of the fresnel lens holder.





• Attach SCREW LOCK G to the head of each set-screw after completing the adjustments and checks.



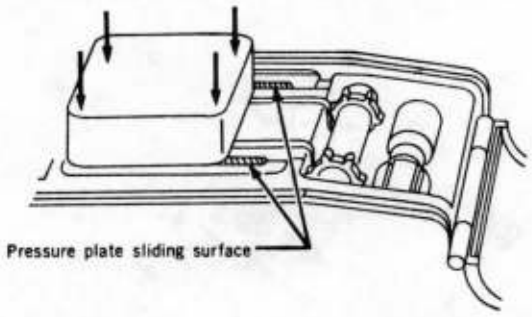
3. After adjustment, operate the mirror several times and rotate the helicoid of the standard lens to match the vertical lines of the chart image with each other. Then make sure that the value is within the standard value (43.58±0.02mm). Also, check for "dull sides" at the micro-prism.
4. If "dull sides" are observed, adjust the balance by regulating the four adjustment screws taking care not to cause the vertical lines of chart image to become deflected.

■ Body Back Adjustment

■ Measuring instruments: Body back gauge (43.70mm)
: Parallel surface plate (for 2005)
: Dial gauge

[1] Adjustment of contact plate surface levels

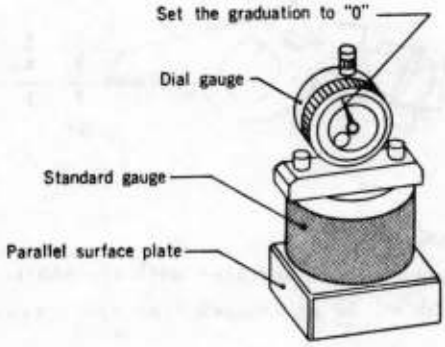
Put a parallel surface plate on the body contact plates and lightly push the four portions as shown by arrows to check for "clearance". Adjust it by tapping high-level portions with use of a fiber cushion.

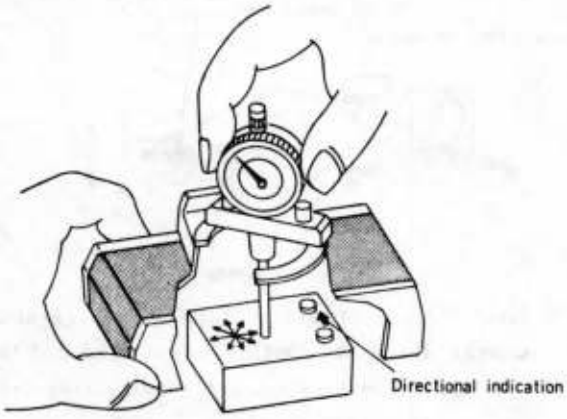


• Note that the parallel surface plate should be put on the body with the arrows carved in the plate faced towards the top cover.

[2] Body back measurement (Specified ralue: $43.70^{+0.02}_{0}$ mm, parallelism: within 0.02mm)

Set the shutter dial to "B" and release the shutter, then put the parallel surface plate on the body to make it touch the contact plate surfaces. Check that the dial gauge indicates "0". Then slide the gauge in the directions as shown by arrows in the illustration to measure the body back.



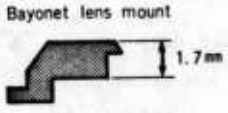


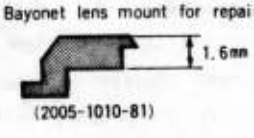
[3] Body back adjustment

1. When the measured value is lower than the specified value···adjust it with washers shown in the table below.

Type	1061-81	1062-81	1063-81
Thickness	0.02	0.05	0.1

2. When the measured value is higher than the specified value···Replace bayonet lens mount with bayonet lens mount for repair (2005-1010-81) and also adjustment it with washers.

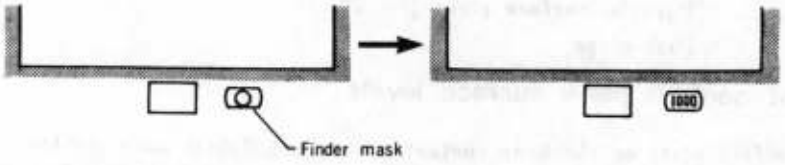




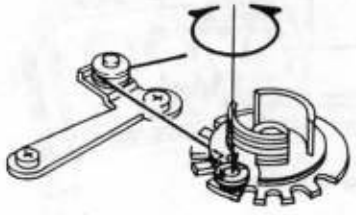
3. When the bayonet lens mount for repair is used, check the lens datachingtorgue. If the torque is too light, adjust it by bending bayonet spring (0111).

[3] Adjustment of SS In-Finder

1. Setting the camera to M-or A-mode, look into the finder. Turn the shutter dial to ○, X~500, 1000, and check that each shutter speed is correctly indicated in SS finder mask (5035).

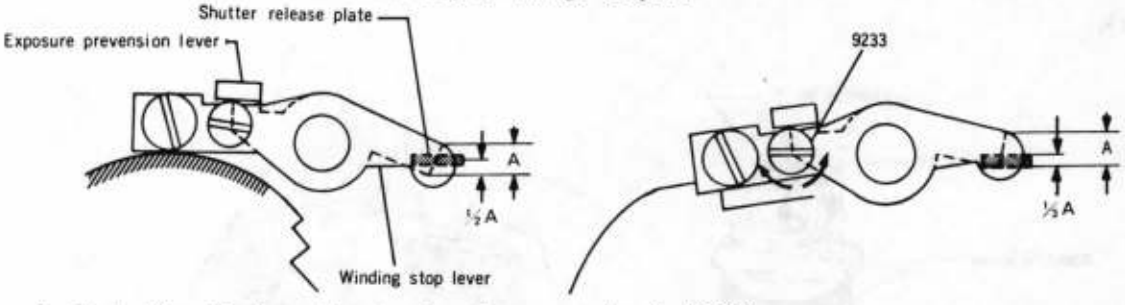


2. If the shutter speed indication is horizontally deflected out of the mask, adjust it by turning the string hook. And if it is bertically deflected, check the position of the finder mask (See Page. 28).



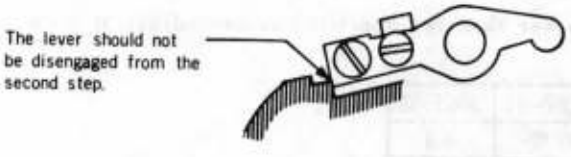
■ Exposure Prevention Timing Adjustment and Checking of Release Stroke Adjustment

1. When the winding stop lever is at the shaded area of charge coupler (illustrated at left below), the exposure prevention lever should be about one-half engaged with the shutter release plate (0242). And this engagement should be about 1/3 when the winding stop lever comes to rest on the first step of charge coupler.



2. Make the adjustment by turning the eccentric pin (9233).

Check: When the shutter is released and the winding lever is operated with the shutter button pressed, the winding stop lever should not be disengaged from the second step of charge coupler.



3. Checking of release stroke adjustment

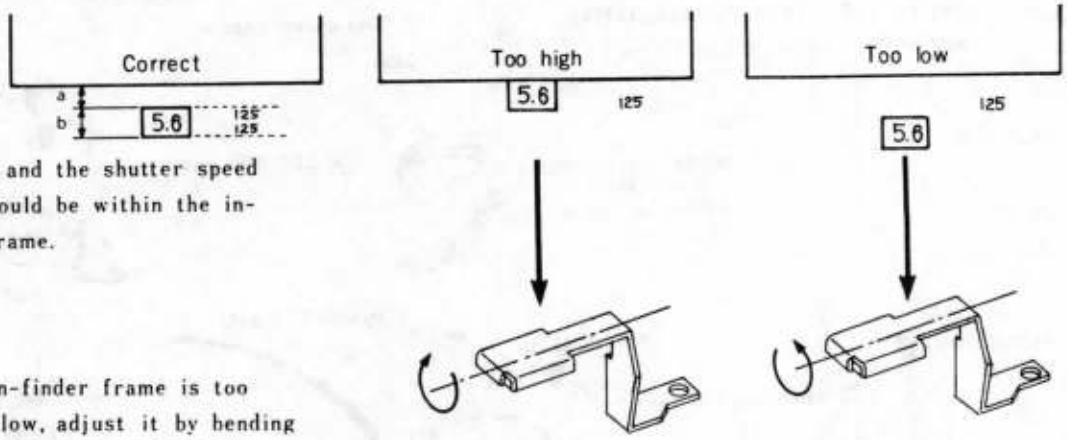
① When the shutter button is pressed with shutter dial set at "X"~1/1000, there should be a clearance between shutter release plate and exposure prevention lever.

② When winding operation is done with shutter dial set at "○" or "B" and with shutter button being pressed, the shutter should not be released.

■ Adjustment of Indications In-Finder

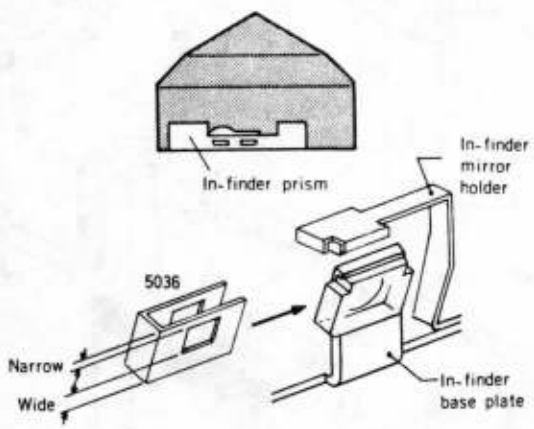
1 Adjustment of diaphragm in-finder

1. Mount a standard lens on the body and look into the finder, setting the diaphragm at F 5.6 to see that the indication is as illustrated below.



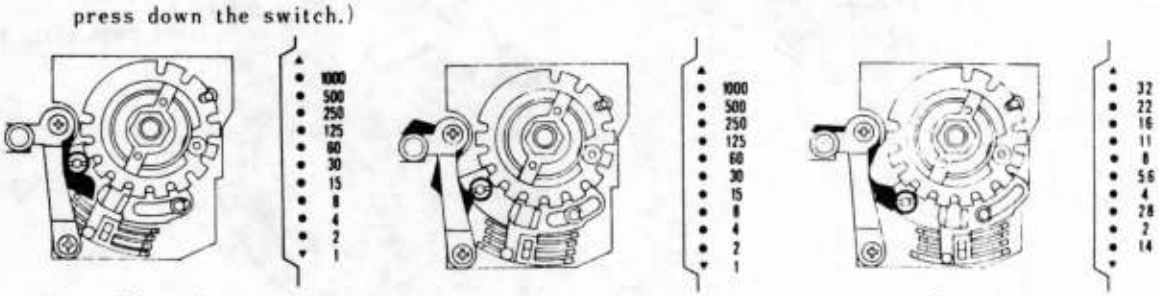
$0 < a \leqq b$, and the shutter speed value should be within the in-finder frame.

2. If the in-finder frame is too high or low, adjust it by bending the in-finder mirror holder.
3. If the in-finder frame is excessively deflected or inclined, check for defective position of in-finder base plate, too much bending of in-finder mirror holder, and inclining of in-finder prism (5811).
4. If the indication of F 5.6 is off-center in the frame, adjust it by shifting the in-finder mask (5036), and glue it again.



2 Adjustment of figure plate change lever

1. Shifting the mode change switch, check the view of the figure plate in each mode. (Do not press down the switch.)



2. If the figure plate view is deflected, adjust it by bending the figure plate change lever and speed dial base plate.

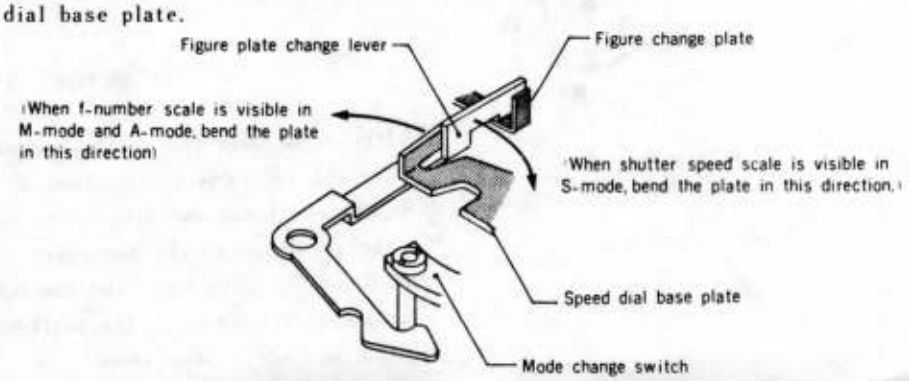
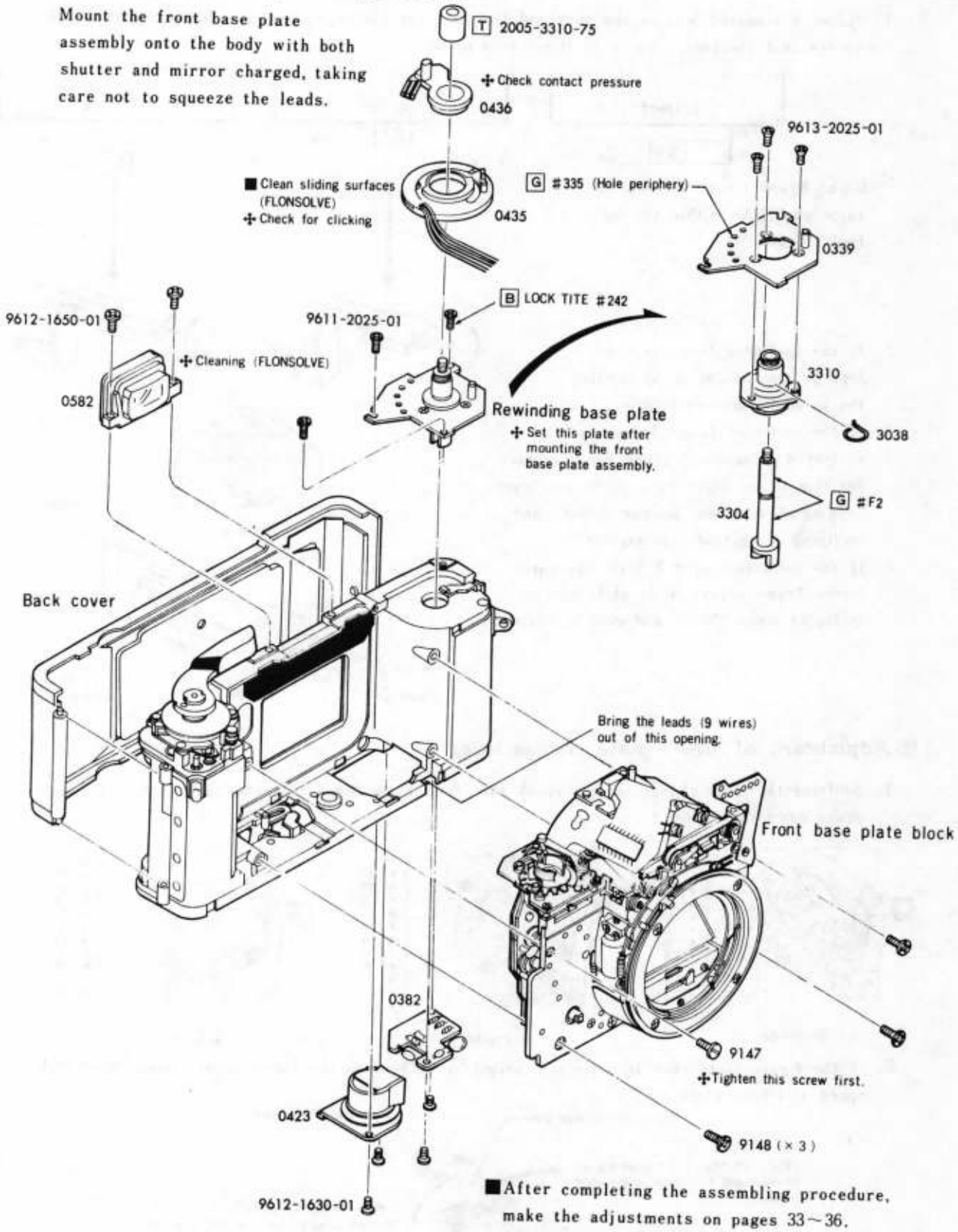


Figure plate change lever
Figure change plate
(When f-number scale is visible in M-mode and A-mode, bend the plate in this direction)
(When shutter speed scale is visible in S-mode, bend the plate in this direction.)
Speed dial base plate
Mode change switch

[19] Front Base Plate Block, Rewinding Base Plate and Back Cover

✣ Front base plate assembly mounting procedure.

Mount the front base plate assembly onto the body with both shutter and mirror charged, taking care not to squeeze the leads.



■ After completing the assembling procedure, make the adjustments on pages 33～36. Solder the leads and flexible circuit base plate according to the connection diagram on Page. 37. Then make the electrical adjustments according to the instructions given on Page. 40 and after.